



February 7, 2025

**VIA E-FILING**

Debbie-Anne Reese, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, DC 20426

Subject: Little Falls Hydroelectric Project (FERC Project No. 2532)  
Sylvan Hydroelectric Project (FERC Project No. 2454)  
Pillager Hydroelectric Project (FERC Project No. 2663)  
Initial Study Report

Dear Secretary Reese:

ALLETE, Inc., doing business as Minnesota Power (MP or Licensee), the Licensee of the Little Falls Hydroelectric Project (Little Falls Project) (FERC No. 2532), Sylvan Hydroelectric Project (Sylvan Project) (FERC No. 2454), and Pillager Hydroelectric Project (Pillager Project) (FERC No. 2663), herein collectively referred to as the "Projects," electronically files with the Federal Energy Regulatory Commission (Commission or FERC) the Initial Study Report (ISR) for the relicensing of the Projects in accordance with the requirements of 18 Code of Federal Regulation (CFR) Part 5.

The FERC licenses for Projects expire on March 31, 2028. The Licensee is using the Commission's Integrated Licensing Process (ILP) to relicense the Projects concurrently. The Little Falls Project is a 4.72-megawatt (MW) run-of-river (ROR) facility located on the Mississippi River in Morrison County, Minnesota. The Sylvan Project is a 1.8-MW ROR facility located on the Crow Wing River in Cass, Crow Wing, and Morrison counties, Minnesota. The Pillager Project is a 1.52-MW ROR facility located on the Crow Wing River in Cass and Morrison counties, Minnesota.

The Licensee submitted a Revised Study Plan (RSP) on January 9, 2024 and the RSP was approved in the Commission's January 31, 2024 Study Plan Determination (SPD) for the Projects. The studies are listed below.

Little Falls Project

- Water Quality Study
- Desktop Fish Entrainment and Impingement Study
- Cultural Resources Study

#### Sylvan Project

- Water Quality Study
- Desktop Fish Entrainment and Impingement Study
- Recreation Use and Facility Inventory Study
- Cultural Resources Study

#### Pillager Project

- Desktop Fish Entrainment and Impingement Study
- Recreation Use and Facility Inventory Study
- Cultural Resources Study

The Licensee has conducted studies as described in the RSP, and, in accordance with 18 CFR §5.15, the Licensee is hereby filing the ISR with the Commission. The ISR describes the Licensee's overall progress in implementing the study plan and schedule, summarizes available data, and describes any variances from the study plan and schedule approved by the Commission. The Cultural Resources Studies for the Projects are being filed as privileged.

The Commission's regulations at 18 C.F.R. § 5.15(c) require the Licensee to hold an ISR Meeting with participants and FERC staff within 15 days of filing the ISR. Accordingly, MP will hold a virtual **ISR Meeting from 9:00 a.m. to 12:00 p.m. Central Time on February 19, 2025**. The purpose of the ISR Meeting is to review the contents of the ISR, discuss the study results and proposals, if any, to modify the study plan. The meeting is a public meeting; interested agencies, Tribes, stakeholders, and individuals are invited to attend. The virtual ISR Meeting invitation can be requested by sending an email to [lesley.brotkowski@kleinschmidtgroup.com](mailto:lesley.brotkowski@kleinschmidtgroup.com).

Please direct any questions pertaining to the Projects to me by phone at (218) 355-3191 or e-mail at [gprom@allete.com](mailto:gprom@allete.com).

Best Regards,



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Attachments: Distribution List  
Initial Study Report for the Little Falls Project (FERC P-2532), Sylvan Project (FERC P-2454), and Pillager Project (FERC P-2663)

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**Initial Study Report for the Little Falls Project (FERC P-2532),  
Sylvan Project (FERC P-2454), and Pillager Project (FERC P-2663)**

# INITIAL STUDY REPORT

LITTLE FALLS HYDROELECTRIC PROJECT  
FERC P-2532

SYLVAN HYDROELECTRIC PROJECT  
FERC P-2454

PILLAGER HYDROELECTRIC PROJECT  
FERC P-2663

Prepared for:

**ALLETE, Inc.**

Prepared by:

**Kleinschmidt Associates**

February 2025

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## DEFINITIONS OF TERMS, ACRONYMS, AND ABBREVIATIONS

APE	Area of Potential Effects
CFR	Code of Federal Regulations
Commission	Federal Energy Regulatory Commission
DLA	Draft License Application
DO	dissolved oxygen
°C	degrees Celsius
°F	degrees Fahrenheit
FERC	Federal Energy Regulatory Commission
ILP	Integrated Licensing Process
ISR	Initial Study Report
Licensee	ALLETE, Inc., doing business as Minnesota Power
Little Falls Project	Little Falls Hydroelectric Project, FERC P-2532
MCF	million cubic feet
mg/L	milligram per liter
MIAC	Minnesota Indian Affairs Council
Minnesota SHPO	Minnesota State Historic Preservation Office
MP	Minnesota Power
MW	megawatt
NOI	Notice of Intent
NRHP	National Register of Historic Places
OSA	Office of State Archaeologist
PAD	Pre-Application Document
Pillager Project	Pillager Hydroelectric Project, FERC P-2663
Project Vicinity	The area within ½ mile of the associated FERC Project Boundary
PSP	Proposed Study Plan
ROR	run-of-river
RSP	Revised Study Plan
SD1	Scoping Document 1
SD2	Scoping Document 2
SPD	Study Plan Determination
SRHP	State Register of Historic Places
Sylvan Project	Sylvan Hydroelectric Project, FERC P-2454
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Office
USR	Updated Study Report

## 1.0 OVERVIEW

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### 1.1 Background

ALLETE, Inc, doing business as Minnesota Power (MP), is the Licensee, owner, and operator of the Little Falls Hydroelectric Project (P-2532) (Little Falls Project), Sylvan Hydroelectric Project (P-2454) (Sylvan Project), and Pillager Hydroelectric Project (P-2663) (Pillager Project), herein collectively referred to as the “Projects.” The Little Falls Project is a 4.72-megawatt (MW) run-of-river (ROR) facility located on the Mississippi River in Morrison County, Minnesota. The Sylvan Project is a 1.80 MW ROR facility located on the Crow Wing River in Cass, Crow Wing, and Morrison counties, Minnesota. The Pillager Project is a 1.52 MW ROR facility located on the Crow Wing River in Cass and Morrison counties, Minnesota.

The Projects are licensed by the Federal Energy Regulatory Commission (FERC or Commission). There are no federal lands associated with the Projects. The Little Falls Project FERC license was issued October 27, 1993.<sup>1</sup> The Sylvan Project FERC license was issued October 29, 1993.<sup>2</sup> The Pillager Project FERC license was issued April 27, 1998.<sup>3</sup> The current operating licenses for each of the Projects expire on March 31, 2028. In accordance with FERC’s regulations at 18 Code of Federal Regulations (CFR) §16.9(b), the Licensee must file its applications for new licenses for the Projects with FERC no later than March 31, 2026. The Licensee is using the Commission’s Integrated Licensing Process (ILP) for the relicensing of the Projects.

On March 30, 2023, the Licensee filed with the Commission a Pre-Application Document (PAD) and three Notice of Intents (NOIs) for the Projects. The NOIs and PAD were distributed to Federal and state resource agencies, local governments, Native American tribes, non-governmental organizations, and others likely to be interested in the relicensing proceeding. FERC issued Scoping Document 1 (SD1) on May 26, 2023. FERC held two scoping meetings on June 21 and June 22, 2023. Visits to the Projects were held on June 21, 2023. FERC issued Scoping Document 2 (SD2) on September 8, 2023. SD2 includes the ILP Process Plan and Schedule for the relicensing of the Projects.

The Licensee filed a Proposed Study Plan (PSP) on September 8, 2023. The Licensee held a Study Plan Meeting on October 11, 2023. The Licensee filed a Revised Study Plan (RSP) on January 9, 2024. FERC issued the Study Plan Determination (SPD) on January 31, 2024. The SPD approved the studies as described in the RSP. The studies included in the RSP are listed below by project.

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<sup>1</sup> 65 ¶ 62,084 (1993).

<sup>2</sup> 65 ¶ 62,094 (1993).

<sup>3</sup> 83 ¶ 62,073 (1998).

#### Little Falls Project

- Water Quality Study
- Desktop Fish Entrainment and Impingement Study
- Cultural Resources Study

#### Sylvan Project

- Water Quality Study
- Desktop Fish Entrainment and Impingement Study
- Recreation Use and Facility Inventory Study
- Cultural Resources Study

#### Pillager Project

- Desktop Fish Entrainment and Impingement Study
- Recreation Use and Facility Inventory Study
- Cultural Resources Study

The 2024 study season was completed, and the Licensee herein submits the Initial Study Report (ISR).

### **1.2 Purpose of Initial Study Report**

This ISR was developed pursuant to 18 CFR § 5.15(c)(1). The purpose of the ISR is to (1) describe its overall progress in implementing the approved study plan, (2) update the schedule for implementing the studies, and (3) describe the data collected. This ISR includes an explanation of variances from the approved Study Plan and schedule and rationale for proposed modifications to ongoing studies or new studies being proposed.

### **1.3 Initial Study Report Meeting**

Pursuant to 18 CFR § 5.15(c)(2), the Licensee has scheduled the ISR Meeting for February 19, 2025 from 9:00 a.m. to 12:00 p.m. Central Time. The meeting will be a virtual meeting. The purpose of the ISR Meeting is to review the contents of the ISR, discuss the study results and proposals, if any, to modify the study plan. The meeting is a public meeting; interested agencies, Tribes, stakeholders, and individuals are invited to attend. The virtual meeting invitation can be requested by sending an email to [lesley.brotkowski@kleinschmidtgroup.com](mailto:lesley.brotkowski@kleinschmidtgroup.com).

Pursuant to 18 CFR § 5.15(c)(3), the Licensee will file an ISR meeting summary with the Commission within 15 days of the ISR meeting. Within 30 days of the filing of the ISR meeting summary, stakeholders may file any disagreements concerning the ISR meeting summary, as well as any

recommendations and associated justification for modifications to on-going studies or requests for new studies.

#### **1.4 Study Plan Modification**

Recommendations for modified or new studies must be accompanied by justification in accordance with FERC's regulations section 5.15(c)(4), and meet the applicable criteria as defined by 18 CFR § 5.15(d) and § 5.15(e). The Licensee subsequently has 30 days to file a response to comments. FERC will then have an additional 30 days to resolve any disagreements and/or modifications to the study plan and to issue a determination regarding any disagreements and/or modifications to the approved study plan.

#### **1.5 Continuation of Studies**

The studies proposed in the RSP and as approved by FERC in the SPD were completed in 2024. No additional studies are proposed for 2025.

#### **1.6 Intent to File Draft License Application**

In accordance with 18 CFR § 5.16(c), as compared to a Preliminary Licensing Proposal, the Licensee plans to file a Draft License Application (DLA) with the Commission and distribute the DLA to the licensing stakeholders on or before November 1, 2025.

## **2.0 LITTLE FALLS INITIAL STUDY REPORTS**

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Provided below are summaries describing the overall progress in implementing the study plan for the Little Falls Project. At the Little Falls Project, a Water Quality Study, Desktop Fish Entrainment and Impingement Study, and Cultural Resources Study were completed. The completed reports are appended. Key findings are provided herein, particularly for the Cultural Resource Study, as the report is being filed as privileged. Variances from the study plan and schedule, if any, for each of the studies are described. There are no proposed new studies or proposed modifications to studies for the Little Falls Project.

### **2.1 Water Quality Study**

#### **2.1.1 Study Status**

The Water Quality Study for the Little Falls Project was conducted and completed in 2024 as described in the RSP and approved in the SPD. The complete Little Falls Water Quality Study Report is provided in Appendix A and is summarized below. There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Water Quality Study are proposed by the Licensee.

#### **2.1.2 Study Summary**

The goal of the Water Quality Study was to evaluate dissolved oxygen (DO) and water temperature conditions both upstream and downstream of the Little Falls Project to determine if state water quality standards are met. Water temperature and DO at the Little Falls Project were documented at three locations: 1) forebay; 2) downstream of the spillway; and 3) downstream of the powerhouse. A total of 65 water temperature and DO readings were collected over the course of the study completed at the Little Falls Project from June through September 2024.

The observed readings were typical of well-mixed, warmwater rivers in Minnesota. Water temperature generally increased at all sites from June 11, 2024, to July 25, 2024, and decreased from July 25, 2024, to August 8, 2024. There was a moderate increase in temperature noted from August 8, 2024, to September 13, 2024, followed by a drop in temperature from September 13, 2024, to September 25, 2024. DO showed a modest decrease from June 11, 2024, to July 25, 2024, where DO subsequently increased over the remainder of the study until September 25, 2024.

Mean water temperature and DO measurements were similar between the three locations. Mean DO and temperature measurements at the forebay were 8.31 milligram per liter (mg/L) and 20.91 degrees Celsius (°C), respectively. Mean DO and temperature measurements at the downstream

of spillway location were 8.78 mg/L and 20.86 °C. Mean DO and temperature measurements at the downstream of powerhouse location were 8.73 mg/L and 21.20 °C.

Dissolved oxygen readings at all stations were above the Minnesota Class 2B minimum stream standard of 5.00 mg/L for all sampling events. Temperatures at each monitoring location throughout the course of the study remained below 86 degrees Fahrenheit (30 °C) and below 3 degrees Fahrenheit above natural temperature in lakes based on monthly average of maximum daily temperatures. There were a few instances of DO stratification at the forebay location, but stratification was not strong and not a consistent occurrence throughout the duration of the study.

## **2.2 Desktop Fish Entrainment and Impingement Study**

### **2.2.1 Study Status**

The Desktop Fish Entrainment and Impingement Study for the Little Falls Project was conducted in 2024 as described in the RSP and approved in the SPD. The Little Falls Project Desktop Fish Entrainment and Impingement Study Report is provided in Appendix B.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Desktop Fish Entrainment and Impingement Study are proposed by the Licensee.

### **2.2.2 Study Summary**

The goal of the Desktop Fish Entrainment and Impingement Study was to evaluate the potential for fish entrainment and impingement, assess survival of potentially entrained fish, and assess the effect that entrainment and impingement may have on the local fish communities.

The Desktop Fish Entrainment Study completed the following objectives: a) described the physical characteristics of the projects (i.e., intake structures and turbines), and documented factors that could affect impingement, entrainment, and survival as they relate to intake dimensions, trashrack spacing, turbine specifications, intake velocity, and flow capacity; b) determined target fish species or family groups, and described factors that influence their vulnerability to impingement, entrainment and turbine survival; c) estimated entrainment rates and turbine passage survival rates for target fish species or family groups; and d) described potential effects to local fish communities from potential entrainment and impingement.

The complete report is available in Appendix B. Key findings are summarized below.

Impingement was determined to be an unlikely impact at the Little Falls Project. A comparison of fish swim speeds and body sizes to project intake velocities and trash rack spacing indicated low

potential for impingement, as intake velocities are lower than swimming speeds for fish species and size classes that are large enough to be impinged. It was determined that fish approaching the project intake would either avoid intake flows by swimming away or be entrained through the trashracks.

The estimates of annual entrainment and turbine mortality presented were developed based on available data and are intended to provide an order-of-magnitude assessment of potential fish entrainment and turbine mortality at the Little Falls Project. The calculations used several conservative assumptions, as described in detail in the report. The database of entrainment studies was narrowed to nine sites that are comparable to the Little Falls Project. An entrainment rate for the Little Falls Project was estimated to be 0.77 (fish/million cubic feet [MCF]). Annual filtered entrainment estimates across flow scenarios ranged from approximately 25,000 fish in the low flow scenario to approximately 74,000 fish in the high flow scenario. Annual mortality estimates across flow scenarios and turbine mortality rates ranged from approximately 1,150 fish killed in the low flow scenario to 14,500 fish killed in the high flow scenario.

## **2.3 Cultural Resources Study**

### **2.3.1 Study Status**

The Cultural Resources Study for the Little Falls Project was conducted in 2024 as described in the RSP and approved in the SPD. The study included a Historic Architectural Resources Study and an Archaeological Resources Study. The Phase I Architectural History Survey and Evaluation for the Little Falls Hydroelectric Relicensing Project is provided in Appendix C. The Phase I Archaeological Investigation and Conditions Assessment of Archaeological Sites for the Little Falls Hydroelectric Relicensing Project is provided in Appendix D. The information contained in these reports is considered privileged information, so the reports are filed with the FERC as such.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Cultural Resources Study are proposed by the Licensee. No additional studies pertaining to cultural resources are proposed.

### **2.3.2 Study Summary**

The goal of the Historic Architectural Resources Study was to identify historic architectural resources within the Area of Potential Effects (APE) and determine the potential effects of continued hydropower operations through FERC relicensing on historic architectural resources that are listed, eligible, or potentially eligible for listing in the National Register of Historic Places (NRHP) within the APE.

The Historic Architectural Resources Study completed the following objectives: a) identified the APE in consultation with the Minnesota SHPO and interested tribes; b) performed a literature review and reconnaissance survey to compile existing information and identify historic architectural resources 45 years or older that are listed, eligible, or potentially eligible for listing in the NRHP within the APE; c) performed updated survey and evaluation documentation of the NRHP-eligible Project dams and associated facilities; and d) evaluated potential project effects on historic architectural resources that are listed, eligible, or potentially eligible for listing in the NRHP within the APE.

The goal of the Archaeological Resources Study was to identify archaeological resources within the APE and determine the potential effects of continued hydropower operations through FERC relicensing on archaeological resources that are listed, eligible, or recommended eligible for listing in the NRHP within the APE.

The Archaeological Resources Study completed the following objectives: a) identified the APE in consultation with the Minnesota SHPO and interested tribes; b) performed a desktop archaeological resources survey to compile existing information on archaeological resources within the APE; c) performed a conditions assessment (field visit) to document the current condition of archaeological resources that are listed or eligible for listing in the NRHP within the APE; d) conducted a reconnaissance survey of the APE to determine if unrecorded archaeological resources are present; and e) evaluated the potential effects the project would have on archaeological resources that are listed, eligible, or recommended eligible for listing in the NRHP within the APE.

#### **2.3.2.1 APE Concurrence**

The APE was identified to encompass the existing FERC approved Project Boundary. In a letter dated June 18, 2024, this APE was proposed to the Minnesota SHPO, Minnesota Office of the State Archaeologist, Minnesota Indian Affairs Council, and potentially interested tribes. The Minnesota SHPO concurred with the proposed APE in a letter dated July 15, 2024. No other correspondence specific to the APE was received.

#### **2.3.2.2 Historic Architectural Resources Study**

In April and May 2024, Merjent conducted an in-person literature search at SHPO and an online review of the Minnesota Statewide Historic Inventory Portal (MnSHIP) and the OSA Portal. The literature search focused on previously identified architectural resources, and previous surveys and inventories within a 1.0-mile radius (Study Area) of the Little Falls Project APE. A total of 852 previously inventoried above-ground resources were identified within the Study Area, of which, nine intersect the APE.

The field survey was conducted on September 9-11, 2024, by a Merjent architectural historian. Six<sup>4</sup> architectural properties or historic-aged resources in the APE were surveyed during fieldwork. Five properties were previously recorded, including two railroad bridges, two highway bridges, and a culvert bridge. These properties were recommended not eligible for the NRHP. Merjent documented one previously unrecorded property in the APE, the Little Falls Hydroelectric Powerplant Facilities, which was recommended eligible to the NRHP. Merjent surveyed and evaluated the historic properties in the APE to determine if the proposed relicensing would adversely affect their integrity and ability to portray historic significance. The properties were recommended as not being adversely affected by the proposed relicensing. Merjent recommended a finding of no adverse effect to historic properties, and no further investigation or mitigation was recommended.

### **2.3.2.3 Archaeological Resources Study**

In April and May 2024, Merjent conducted an in-person literature search at SHPO and an online review of the MnSHIP and the OSA Portal. A review of OSA burial site files was also conducted. The literature search focused on previously identified archaeological sites, cemeteries, architectural resources, and previous archaeological surveys and inventories within a 1.0-mile radius (Study Area) of the Little Falls Project APE. Merjent reviewed other archival resources, including General Land Office (GLO) maps, historical county atlases, and historical aerial imagery to identify potential cultural features in the APE. Merjent identified 46 previously identified archaeological sites, historical cemeteries, and architectural properties in the Little Falls Project Study Area. The sites include precontact, contact period, and postcontact sites that represent a broad range of types, including burial mounds, artifact scatters, trading posts, homesteads, and pictographs, as well as multicomponent precontact, contact period, and postcontact sites. Of the 46 sites, 24 are located in the APE, nine of which are alpha sites that have not been confirmed by a credentialed archaeologist. One of the 24 sites is listed in the NRHP; four have been determined by SHPO to be eligible for listing; one has been determined by SHPO not eligible for listing; and the remainder are unevaluated for listing. Five of the 24 sites are listed in the State Register of Historic Places (SRHP).

The Phase I archaeological field survey was conducted on August 20 and 21, September 4, and October 2, 2024, by Merjent archaeologists. Throughout all stages of the investigation, Merjent applied industry best practices and adhered to the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 Federal Register 44716), the *SHPO Manual*

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<sup>4</sup> Three of the nine properties within the APE were duplicates, thus six individual properties were surveyed.

*for Archaeological Projects in Minnesota* (Anfinson 2005), and the *State Archaeologist's Manual for Archaeological Projects in Minnesota* (Anfinson 2011).

During the reconnaissance survey, no new sites were identified. The boundaries of one previously identified site was expanded to incorporate the discovery location of precontact artifacts recovered during shovel testing just south of the existing site boundary.

Based on the results of the 2024 condition assessment field visits and shoreline observations, it does not appear that any of the sites within the APE have endured major adverse effects due to non-Project modern human activity or Project-related activities. There were some observed non-Project human impacts related to pedestrian traffic and recreational use along the shoreline at some sites. Merjent observed no active erosion of the shorelines during the 2024 field observations.

MP requested information from interested Tribes on potential location of traditional cultural properties (TCPs) within the APE in a letter dated December 4, 2024. The Leech Lake Band of Ojibwe responded to this request on January 28, 2025, stating they do not have any recorded historic properties within the area. As of the date of this filing, no other response to information on TCPs was received from the Tribes and no TCPs have been identified within the APE.

## **3.0 SYLVAN INITIAL STUDY REPORTS**

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Provided below are summaries describing the overall progress in implementing the study plan for the Sylvan Project. At the Sylvan Project, a Water Quality Study, Desktop Fish Entrainment and Impingement Study, Recreation Use and Facility Inventory Study, and Cultural Resources Study were completed. The completed reports are appended. Key findings are provided herein, particularly for the Cultural Resource Study, as the report is being filed as privileged. Variances from the study plan and schedule, if any, for each of the studies are described. There are no proposed new studies or proposed modifications to studies for the Sylvan Project.

### **3.1 Water Quality Study**

#### **3.1.1 Study Status**

The Water Quality Study was conducted in 2024 as described in the RSP and approved in the SPD. The Sylvan Water Quality Study Report is provided in Appendix E.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Water Quality Study are proposed by the Licensee.

#### **3.1.2 Study Summary**

The goal of the Water Quality Study was to evaluate DO and water temperature conditions both upstream and downstream of the Sylvan Project to determine if state water quality standards are met. Water temperature and DO at the Sylvan Project were documented at three locations: 1) upstream of the turbine intake area; 2) immediately downstream of the powerhouse; and 3) downstream of the Sylvan Project dam. A total of 87 DO and water temperature readings were collected over the course of the study completed at the Sylvan Project from June to September 2024.

The observed readings were typical of well-mixed, warmwater rivers in Minnesota. Water temperature increased at all sites from June 11, 2024 to July 25, 2024, and then were generally decreasing for the remainder of the monitoring period. Median DO concentration at all sites generally increased over the study season, from June 11, 2024, to September 25, 2024. The highest median DO samples occurred on September 13, 2024, and the lowest median DO samples occurred on August 8, 2024.

Mean water temperature and DO measurements were similar between the three locations. Mean DO and temperature measurements at the forebay were 7.89 mg/L and 21.33 °C, respectively.

Mean DO and temperature measurements at the powerhouse outlet were 8.01 mg/L and 21.43 °C. Mean DO and temperature measurements at the downstream of the dam location were 8.13 mg/L and 21.25 °C.

Dissolved oxygen readings at all stations were above the Minnesota Class 2B minimum stream standard of 5.00 mg/L for all sampling events. Temperatures at each monitoring location throughout the course of the study remained below 86 degrees Fahrenheit (30 °C) and below 3 degrees Fahrenheit above natural temperature in lakes based on monthly average of maximum daily temperatures. There were a few instances at the forebay location where DO stratification occurred, but stratification was not strong and not a consistent occurrence throughout the duration of the study.

## **3.2 Desktop Fish Entrainment and Impingement Study**

### **3.2.1 Study Status**

The Desktop Fish Entrainment and Impingement Study for the Sylvan Project was conducted in 2024 as described in the RSP and approved in the SPD. The Sylvan Project Desktop Fish Entrainment and Impingement Study Report is provided in Appendix F.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Desktop Fish Entrainment and Impingement Study are proposed by the Licensee.

### **3.2.2 Study Summary**

The goal of the Desktop Fish Entrainment and Impingement Study was to evaluate the potential for fish entrainment and impingement, assess survival of potentially entrained fish, and assess the effect that entrainment and impingement may have on the local fish communities.

The Desktop Fish Entrainment Study completed the following objectives: a) described the physical characteristics of the projects (i.e., intake structures and turbines), and documented factors that could affect impingement, entrainment, and survival as they relate to intake dimensions, trashrack spacing, turbine specifications, intake velocity, and flow capacity; b) determined target fish species or family groups, and described factors that influence their vulnerability to impingement, entrainment and turbine survival; c) estimated entrainment rates and turbine passage survival rates for target fish species or family groups; and d) described potential effects to local fish communities from potential entrainment and impingement.

The complete report is available in Appendix F. Key findings are summarized below.

Impingement was determined to be an unlikely impact at the Sylvan Project. A comparison of fish swim speeds and body sizes to project intake velocities and trash rack spacing indicated low potential for impingement, as intake velocities are lower than swimming speeds for fish species and size classes that are large enough to be impinged. It was determined that fish approaching the project intake would either avoid intake flows by swimming away or be entrained through the trashracks.

The estimates of annual entrainment and turbine mortality presented were developed based on available data and are intended to provide an order-of-magnitude assessment of potential fish entrainment and turbine mortality at the Sylvan Project. The calculations used several conservative assumptions, as described in detail in the report. The database of entrainment studies was narrowed to nine sites that are comparable to the Sylvan Project. An entrainment rate for the Sylvan project was estimated to be 1.12 (fish/MCF). Annual filtered entrainment estimates across flow scenarios ranged from approximately 10,000 fish in the low flow scenario to approximately 34,000 fish in the high flow scenario. Annual mortality estimates ranged from approximately 1,600 fish killed in the low flow scenario to up to 10,600 fish killed in the high flow scenario.

### **3.3 Recreation Use and Facility Inventory Study**

#### **3.3.1 Study Status**

The Recreation Use and Facility Inventory Study for the Sylvan Project was conducted in 2024 as described in the RSP and approved in the SPD. The Sylvan Project Recreation Use and Facility Inventory Study Report is provided in Appendix G.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Recreation Use and Facility Inventory Study are proposed by the Licensee.

#### **3.3.2 Study Summary**

The Recreation Study included two parts: 1) a Recreation Facility Inventory and Condition Assessment, and 2) Recreation Use Assessment. The field inventory documented existing recreation facilities and amenities and associated at the Commission-approved recreation sites. The Recreation Use Assessment included field observations (spot counts) and user surveys.

Results of the recreation usage observations, spot counts, and visitor surveys indicate that there is moderate usage of the Sylvan Dam Boat Access and Fishing Area, Wilder's Landing, and Fisherman's Bridge Boat Launch and Fishing Area. Activities typically included use of the boat launch and fishing. Minimal recreation usage of the Sylvan Canoe Portage was observed. Of the

user surveys completed, the majority at all sites indicated sufficient recreation opportunities. The analysis of the user survey data indicates that on average, there is sufficient capacity at all recreation sites for both current and projected usage at the end of the license period. Occasional overcrowding was noted on holiday weekends. There appears to be adequate capacity for increases in recreation use at these sites.

The amenities at the recreation sites included roadways, parking areas, boat launches, pedestrian trails, and signage. Based on the user survey results, the sites were typically identified to be in good condition. Little to no signs of major degradation, vandalism, or disrepair were noted. Items noted for maintenance or repair included parking lots and roadways, which were observed to have potholes and rutting. Overgrown vegetation was occasionally noted. Maintenance or replacement was recommended for four signs, and other signage was generally in good condition. Minor erosion was noted only at the Fisherman's Bridge Boat Launch and Fishing Area site near the fishing area. Existing erosion control measures were observed, and maintenance or additional placement of gravel/riprap may be required at this site. No signs of significant erosion or slope global instability were noted at any of the sites.

### **3.4 Cultural Resources Study**

#### **3.4.1 Study Status**

The Cultural Resources Study for the Sylvan Project was conducted in 2024 as described in the RSP and approved in the SPD. The Phase I Architectural History Survey and Evaluation for the Sylvan Hydroelectric Relicensing Project is provided in Appendix H. The Phase I Archaeological Investigation and Conditions Assessment of Archaeological Sites for the Sylvan Hydroelectric Relicensing Project is provided in Appendix I. The information contained in these reports is considered privileged information, so the reports are filed with the FERC as such.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Cultural Resources Study are proposed by the Licensee. No additional studies pertaining to cultural resources are proposed.

#### **3.4.2 Study Summary**

The goal of the Historic Architectural Resources Study was to identify historic architectural resources within the APE and determine the potential effects of continued hydropower operations through FERC relicensing on historic architectural resources that are listed, eligible, or potentially eligible for listing in the NRHP within the APE.

The Historic Architectural Resources Study completed the following objectives: a) identified the APE in consultation with the Minnesota SHPO and interested tribes; b) performed a literature review and reconnaissance survey to compile existing information and identify historic architectural resources 45 years or older that are listed, eligible, or potentially eligible for listing in the NRHP within the APE; c) performed updated survey and evaluation documentation of the NRHP-eligible Project dams and associated facilities; and d) evaluated potential project effects on historic architectural resources that are listed, eligible, or potentially eligible for listing in the NRHP within the APE.

The goal of the Archaeological Resources Study was to identify archaeological resources within the APE and determine the potential effects of continued hydropower operations through FERC relicensing on archaeological resources that are listed, eligible, or recommended eligible for listing in the NRHP within the APE.

The Archaeological Resources Study completed the following objectives: a) identified the APE in consultation with the Minnesota SHPO and interested tribes; b) performed a desktop archaeological resources survey to compile existing information on archaeological resources within the APE; c) performed a conditions assessment (field visit) to document the current condition of archaeological resources that are listed or eligible for listing in the NRHP within the APE; d) conducted a reconnaissance survey of the APE to determine if unrecorded archaeological resources are present; and e) evaluated the potential effects the project would have on archaeological resources that are listed, eligible, or recommended eligible for listing in the NRHP within the APE.

#### **3.4.2.1 APE Concurrence**

The APE was identified to encompass the existing FERC approved Project Boundary. In a letter dated June 18, 2024, this APE was proposed to the Minnesota SHPO, Minnesota Office of the State Archaeologist, Minnesota Indian Affairs Council, and potentially interested tribes. The Minnesota SHPO concurred with the proposed APE in a letter dated July 15, 2024. No other correspondence specific to the APE was received.

#### **3.4.2.2 Historic Architectural Resources Study**

In April and May 2024, Merjent conducted an in-person literature search at SHPO and an online review of the MnSHIP and the OSA Portal. The literature search focused on previously identified architectural resources, and previous surveys and inventories within a 1.0-mile radius (Study Area) of the Sylvan Project APE. A total of ten previously inventoried above-ground resources were identified within the Study Area, of which, four intersect the Sylvan Project APE.

The field survey was conducted on September 9-11, 2024, by a Merjent architectural historian. There were 11 architectural properties or historic-aged resources surveyed during fieldwork. These properties included the Sylvan Hydroelectric Powerplant Facilities, the Northern Pacific Railway Historic District, two bridges, one farmstead, and six houses. Two properties, the Sylvan Hydroelectric Powerplant Facilities and the Northern Pacific Railway Historic District were recommended as eligible to the NRHP. The two bridges were recommended as not eligible to the NRHP. Merjent was unable to survey the other seven identified historic-age resources from the public right-of-way due to mature vegetation and trees blocking the buildings from view. Without the ability to see the resources from the public right-of-way, Merjent was unable to clearly evaluate their eligibility for the NRHP. As the properties are not able to be seen from the highway or rural roads, it was deemed unlikely that the proposed relicensing will affect them, eligible or not; therefore, no further additional investigation was recommended.

Merjent surveyed and evaluated the historic properties within the Sylvan Project APE to determine if the proposed relicensing would adversely affect their integrity and ability to portray historic significance. Merjent recommended a finding of no adverse effect to historic properties, and no further investigation or mitigation was recommended.

### **3.4.2.3 Archaeological Resources Study**

In April and May 2024, Merjent conducted an in-person literature search at SHPO and an online review of the MnSHIP and the OSA Portal. A review of OSA burial site files was also conducted. The literature search focused on previously identified archaeological sites, cemeteries, architectural resources, and previous archaeological surveys and inventories within a 1.0-mile radius (Study Area) of the APE. Merjent reviewed other archival resources, including General Land Office (GLO) maps, historical county atlases, and historical aerial imagery to identify potential cultural features in the APE. Merjent identified previously identified 99 archaeological sites, historical cemeteries, and architectural properties in the Sylvan Project Study Area. The sites include precontact, and postcontact sites that represent a broad range of types, burial mounds, artifact scatters, trails, habitation sites, farmsteads, as well as multicomponent pre- and postcontact sites. Of the 99 sites, 52 are previously recorded archaeological sites in the APE. Of the 52 sites, four are alpha sites, which are archaeological sites that have not been confirmed by a credentialed archaeologist. One of the 52 sites is listed in the NRHP, 19 have been determined eligible by the SHPO for listing, and the remainder are unevaluated for listing.

The Phase I archaeological field survey was conducted between September 21, October 4, and October 15, 2024, by Merjent archaeologists. Throughout all stages of the investigation, Merjent applied industry best practices and adhered to the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Federal Register 44716), the SHPO

Manual for Archaeological Projects in Minnesota (Anfinson 2005), and the State Archaeologist's Manual for Archaeological Projects in Minnesota (Anfinson 2011).

During the reconnaissance survey, no new sites were identified.

Based on the results of the 2024 condition assessment field visits and shoreline observations, it does not appear that any of the sites within the APE have endured major adverse effects due to non-Project modern human activity or Project-related activities. There were some observed moderate and limited non-Project modern human impacts related to pedestrian traffic, recreational use of the shoreline, and landowner-initiated improvements to some sites, but conditions have not worsened since previous annual assessments.

Moderate non-Project modern human effects within the Chippewa Agency Historic District were observed in the form of a non-designated, user-made trail used by all-terrain vehicles (ATVs). This trail is confined to the right of way (ROW) borrow adjacent to the roadway. MP has implemented physical barriers and signage to prevent the use of ATVs outside the ROW. After installation of the barriers and signage, ATV use outside the ROW has been prevented since Project annual surveys began in 2013.

Merjent observed one incident of limited erosion within the Chippewa Agency Historic District. It was noted that the erosion may be related to natural drainage from the upland terrace along the shoreline. There were no cultural materials observed within the erosion area. The report indicates that erosion area was limited in extent and the adjacent area does not appear to be in danger of further erosion. Merjent does not recommend action be taken at this time to mitigate the erosion, and that shoreline monitoring surveys should be aware of this area to determine if erosion has worsened. There was no other visible erosion observed during the shoreline visits. Outside of the one incident of limited erosion, there were no other observed Sylvan Project effects, and the shoreline conditions have not worsened since previous assessment.

MP requested information from interested Tribes on potential location of TCPs within the APE in a letter dated December 4, 2024. The Leech Lake Band of Ojibwe responded to this request on January 28, 2025, stating they do not have any recorded historic properties within the area. As of the date of this filing, no other response to information on TCPs was received from the Tribes and no TCPs have been identified within the APE.

Merjent recommended that archaeological monitoring be conducted on a periodic basis (per the requirements for FERC relicensing) for non-Project human effects and Project effects. Monitoring should also be conducted in preparation for activities associated with the operation of the Sylvan Project that could result in planned fluctuations in river or reservoir levels and which could promote erosion and impact the archaeological sites of the APE.

## **4.0 PILLAGER INITIAL STUDY REPORTS**

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Provided below are summaries describing the overall progress in implementing the study plan for the Pillager Project. At the Pillager Project, a Water Quality Study, Desktop Fish Entrainment and Impingement Study, Recreation Use and Facility Inventory Study, and Cultural Resources Study were completed. The completed reports are appended. Key findings are provided herein, particularly for the Cultural Resource Study, as the report is being filed as privileged. Variances from the study plan and schedule, if any, for each of the studies are described. There are no proposed new studies or proposed modifications to studies for the Pillager Project.

### **4.1 Desktop Fish Entrainment and Impingement Study**

#### **4.1.1 Study Status**

The Desktop Fish Entrainment and Impingement Study for the Pillager Project was conducted in 2024 as described in the RSP and approved in the SPD. The Pillager Project Desktop Fish Entrainment and Impingement Study Report is provided in Appendix J.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Desktop Fish Entrainment and Impingement Study are proposed by the Licensee.

#### **4.1.2 Study Summary**

The goal of the Desktop Fish Entrainment and Impingement Study was to evaluate the potential for fish entrainment and impingement, assess survival of potentially entrained fish, and assess the effect that entrainment and impingement may have on the local fish communities.

The Desktop Fish Entrainment Study completed the following objectives: a) described the physical characteristics of the projects (i.e., intake structures and turbines), and document factors that could affect impingement, entrainment, and survival as they relate to intake dimensions, trashrack spacing, turbine specifications, intake velocity, and flow capacity; b) determined target fish species or family groups, and describe factors that influence their vulnerability to impingement, entrainment and turbine survival; c) estimated entrainment rates and turbine passage survival rates for target fish species or family groups; and d) described potential effects to local fish communities from potential entrainment and impingement.

The complete report is available in Appendix J. Key findings are summarized below.

Impingement was determined to be an unlikely impact at the Pillager Project. A comparison of fish swim speeds and body sizes to project intake velocities and trash rack spacing indicated low potential for impingement, as intake velocities are lower than swimming speeds for fish species and size classes that are large enough to be impinged. It was determined that fish approaching the project intake would either avoid intake flows by swimming away or be entrained through the trashracks.

The estimates of annual entrainment and turbine mortality presented were developed based on available data and are intended to provide an order-of-magnitude assessment of potential fish entrainment and turbine mortality at the Pillager Project. The calculations used several conservative assumptions, as described in detail in the report. The database of entrainment studies was narrowed to nine sites that are comparable to the Pillager Project. An entrainment rate for the Pillager Project was estimated to be 1.12 (fish/MCF). Annual filtered entrainment estimates across flow scenarios ranged from approximately 10,000 fish in the low flow scenario to approximately 36,000 fish in the high flow scenario. Annual mortality estimates ranged from approximately 1,700 fish killed in the low flow scenario to up to 11,500 fish killed in the high flow scenario.

## **4.2 Recreation Use and Facility Inventory Study**

### **4.2.1 Study Status**

The Recreation Use and Facility Inventory Study for the Pillager Project was conducted in 2024 as described in the RSP and approved in the SPD. The Pillager Project Recreation Use and Facility Inventory Study Report is provided in Appendix K.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Recreation Use and Facility Inventory Study are proposed by the Licensee.

### **4.2.2 Study Summary**

The Recreation Study included two parts: 1) a Recreation Facility Inventory and Condition Assessment, and 2) Recreation Use Assessment. The field inventory documented existing recreation facilities and amenities and associated at the Commission-approved recreation sites. The Recreation Use Assessment included field observations (spot counts) and user surveys.

Recreation usage at the Pillager Dam Public Canoe Portage & Shorefishing Access was moderate, with all visitors observed to be fishing at the site. Recreation activities at the Pillager Dam Public Boat Launch included boating, fishing, and picnicking. Results of the study indicated that there is

minimal usage of the Alvah's Landing. No users were observed or completed a survey at the Crow Wing River Canoe Campsite. Of the user surveys completed at the other sites, all but one indicated sufficient recreation opportunities were offered. The sites were typically categorized as slightly under to moderately utilized, and minimal to no concerns for safety were identified. Overcrowding does not appear to be a concern at the recreation sites. The analysis of the user survey data indicated sufficient capacity at recreation sites for both current and projected usage at the end of the license period. There appears to be adequate capacity for potential increases in recreation use at these sites.

The amenities at the recreation sites included roadways, parking areas, boat launches, pedestrian trails, and signage. The condition of the recreation sites and amenities were typically identified as satisfactory to good. Little to no signs of major degradation, erosion, vandalism, or disrepair were noted. Items noted for maintenance or repair included parking lots and roadways at Alvah's Landing and the Pillager Dam Public Boat Launch, which were observed to have potholes and depressions. Vegetation maintenance was recommended. Signage was generally in good condition and legible, except the portage trail marker at the Pillager Dam Public Canoe Portage and Shorefishing Access which was noted to need maintenance.

### **4.3 Cultural Resources Study**

#### **4.3.1 Study Status**

The Cultural Resources Study for the Pillager Project was conducted in 2024 as described in the RSP and approved in the SPD. The Phase I Architectural History Survey and Evaluation for the Pillager Hydroelectric Relicensing Project is provided in Appendix L. The Phase I Archaeological Investigation and Conditions Assessment of Archaeological Sites for the Pillager Hydroelectric Relicensing Project is provided in Appendix M. The information contained in these reports is considered privileged information, so the reports are filed with the FERC as such.

There were no variances to the study plan. The Licensee believes that the information collected is sufficient and no modifications to the study plan pertaining to the Cultural Resources Study are proposed by the Licensee. No additional studies pertaining to cultural resources are proposed.

#### **4.3.2 Study Summary**

The goal of the Historic Architectural Resources Study was to identify historic architectural resources within the APE and determine the potential effects of continued hydropower operations through FERC relicensing on historic architectural resources that are listed, eligible, or potentially eligible for listing in the NRHP within the APE.

The Historic Architectural Resources Study completed the following objectives: a) identified the APE in consultation with the Minnesota SHPO and interested tribes; b) performed a literature review and reconnaissance survey to compile existing information and identify historic architectural resources 45 years or older that are listed, eligible, or potentially eligible for listing in the NRHP within the APE; c) performed updated survey and evaluation documentation of the NRHP-eligible Project dams and associated facilities; and d) evaluated potential project effects on historic architectural resources that are listed, eligible, or potentially eligible for listing in the NRHP within the APE.

The goal of the Archaeological Resources Study was to identify archaeological resources within the APE and determine the potential effects of continued hydropower operations through FERC relicensing on archaeological resources that are listed, eligible, or recommended eligible for listing in the NRHP within the APE.

The Archaeological Resources Study completed the following objectives: a) identified the APE in consultation with the Minnesota SHPO and interested tribes; b) performed a desktop archaeological resources survey to compile existing information on archaeological resources within the APE; c) performed a conditions assessment (field visit) to document the current condition of archaeological resources that are listed or eligible for listing in the NRHP within the APE; d) conducted a reconnaissance survey of the APE to determine if unrecorded archaeological resources are present; and e) evaluated the potential effects the project would have on archaeological resources that are listed, eligible, or recommended eligible for listing in the NRHP within the APE.

#### **4.3.2.1 APE Concurrence**

The APE was identified to encompass the existing FERC approved Project Boundary. In a letter dated June 18, 2024, this APE was proposed to the Minnesota SHPO, Minnesota Office of the State Archaeologist, Minnesota Indian Affairs Council, and potentially interested tribes. The Minnesota SHPO concurred with the proposed APE in a letter dated July 15, 2024. No other correspondence specific to the APE was received.

#### **4.3.2.2 Historic Architectural Resources Study**

In April and May 2024, Merjent conducted an in-person literature search at SHPO and an online review of the MnSHIP and the OSA Portal. The literature search focused on previously identified architectural resources, and previous surveys and inventories within a 1.0-mile radius (Study Area) of the Pillager Project APE. A total of 11 previously inventoried above-ground resources were identified within the Study Area, of which, four intersect the Pillager Project APE. The properties

in the APE included the Northern Pacific Railway Historic District, Pillager Hydroelectric Powerplant Facilities, and two roads.

The field survey was conducted on September 11, 2024, by a Merjent architectural historian. There were 16 architectural properties or historic-aged resources surveyed in the APE during fieldwork. The Northern Pacific Railway Historic District and the Pillager Hydroelectric Powerplant Facilities were recommended as eligible to the NRHP and two roads were recommended as not eligible to the NRHP. Twelve properties were deemed unevaluated as Merjent was unable to survey the identified historic-age resources from the public right-of-way due to mature vegetation and trees blocking the buildings from view. Without the ability to see the resources from the public right-of-way, Merjent was unable to clearly evaluate their eligibility for the NRHP. Additionally, access was further limited by long private driveways or other roads with "No Trespassing" signs posted. As the properties are not able to be seen from the highway or rural roads, it was deemed unlikely that the proposed relicensing will affect them, eligible or not; therefore, no further additional investigation was recommended.

Merjent surveyed and evaluated the historic properties within the Pillager Project APE to determine if the proposed relicensing would adversely affect their integrity and ability to portray historic significance. Merjent recommended a finding of no adverse effect to historic properties, and no further investigation or mitigation was recommended.

#### **4.3.2.3 Archaeological Resources Study**

In April and May 2024, Merjent conducted an in-person literature search at SHPO and an online review of the MnSHIP and the OSA Portal. A review of OSA burial site files was also conducted. The literature search focused on previously identified archaeological sites, cemeteries, architectural resources, and previous archaeological surveys and inventories within a 1.0-mile radius (Study Area) of the APE. Merjent reviewed other archival resources, including General Land Office (GLO) maps, historical county atlases, and historical aerial imagery to identify potential cultural features in the APE. Merjent identified 33 previously identified archaeological sites, historical cemeteries, and architectural properties in the Pillager Project Study Area. These include precontact, contact period, and postcontact sites that represent a broad range of types, including single artifact finds, artifact scatters, burial mounds, homesteads, and structural ruins, as well as multicomponent precontact, contact period, and postcontact sites. Of those 33 sites, 25 previously recorded archaeological sites were identified in the APE. Of the 25 sites, one is an alpha site, which is an archaeological site that has not been confirmed by a credentialed archaeologist. All 25 sites are unevaluated for listing in the NRHP, and none are listed in the SRHP, the State Historic Sites Network, or the National Historic Landmarks list.

The Phase I archaeological field survey was conducted between September 9, September 21, and October 3, 2024, by Merjent archaeologists. Throughout all stages of the investigation, Merjent applied industry best practices and adhered to the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Federal Register 44716), the SHPO Manual for Archaeological Projects in Minnesota (Anfinson 2005), and the State Archaeologist's Manual for Archaeological Projects in Minnesota (Anfinson 2011).

During the reconnaissance survey, no new sites were identified. The boundaries of one site were expanded to incorporate the discovery location of precontact artifacts near the site, and postcontact components were added to two previously inventoried precontact sites, while a precontact component was added to a previously inventoried postcontact site.

Based on the results of the 2024 condition assessment field visits and shoreline observations, it does not appear that any of the sites within the APE have endured major adverse effects due to non-Project modern human activity or Project-related activities. Merjent observed no active erosion of the shorelines in the APE during the 2024 field visits.

MP requested information from interested Tribes on potential location of TCPs within the APE in a letter dated December 4, 2024. The Leech Lake Band of Ojibwe responded to this request on January 28, 2025, stating they do not have any recorded historic properties within the area. As of the date of this filing, no other response to information on TCPs was received from the Tribes and no TCPs have been identified within the APE.

Merjent recommended that archaeological monitoring be conducted on a periodic basis for non-Project human effects and Project effects. Monitoring should also be conducted in preparation for activities associated with the operation of the Pillager Project that could result in planned fluctuations in river or reservoir levels and which could promote erosion and impact the archaeological sites of the APE.

## 5.0 ADDITIONAL INFORMATION

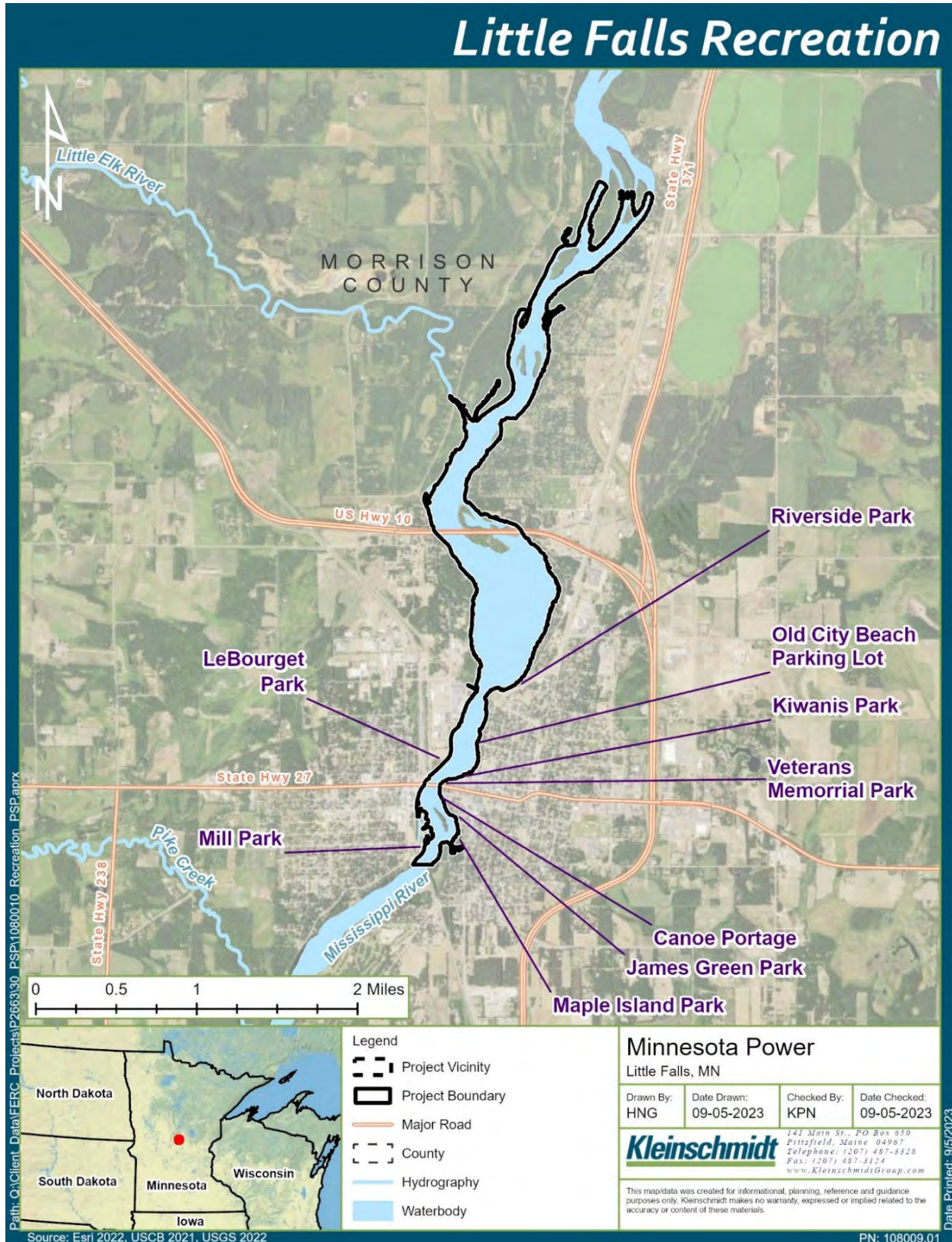
In response to Schedule C item (2) of FERC’s July 27, 2023 letter, and as proposed in the Licensee’s approved study plan, the Licensee provides the following information pertaining to certain recreation sites in the Little Falls Project Vicinity. The information requested included two parts: 1) available recreation user data, and 2) details on canoe portage maintenance at the Little Falls Project. The required information is provided below.

The Licensee consulted with the City of Little Falls to obtain available recreation user information at the recreation sites in the Little Falls Project Vicinity that are adjacent to or provide access to the Little Falls Project, as listed in Table 1 (and as depicted on Figure 1). The associated consultation record is provided in Appendix N. The City of Little Falls confirmed that these recreation sites are owned and maintained by the City. The Licensee does not directly support the maintenance at the canoe portage. The City of Little Falls does not collect recreation user data at the recreation sites. However, the City of Little Falls was able to provide estimates on recreation use types and annual visitors to the sites. These estimates are provided in Table 1, below, by primary activity as well as total annual visitors.

**Table 1: Estimated Annual Visitors to Recreation Sites in Little Falls Project Vicinity**

Site Name	Primary Recreation Activity and Annual Visitors	Total Visitors
Mill Park	Fishing – 3,600 Walking/Biking – 1,000	4,600
Maple Island Park	Walking – 14,500 Fishing – 1,500 Kayak/Canoe – 200 Concerts/events – 3,000	19,200
James Green Park	Walking – 14,500 Fishing – 3,500 Kayak/Canoe – 200	18,200
Veterans Memorial Park	Walking – 3,000	3,000
Kiwanis Park	Walking – 2,000 Fishing – 2,000	4,000
Old City Beach Parking Lot	Fishing – 750	750
Canoe Portage	Portage – 200	200
LeBourget Park	Walking – 1,500 Fishing – 2,000 Kayak/Canoe – 200 Disc Golf – 1,500 Concerts – 500	5,700
Riverside Park	Picnicking – 500	500

**Figure 1: Recreation Sites in the Little Falls Project Vicinity Adjacent to or Provide Access to the Little Falls Project**



## 6.0 UPCOMING ILP MILESTONES AND STUDY REPORTING

Table 2 presents upcoming major ILP milestones. The complete ILP schedule is provided in FERC’s SD2.

**Table 2: Upcoming Major ILP Milestones**

Responsible Entity	Milestone	Date	FERC Regulation
Stakeholders	ISR Meeting	February 19, 2025 (9:00 a.m. to 12:00 p.m.)	5.15(c)(2)
Licensee	File ISR Meeting Summary	March 6, 2025	5.15(c)(3)
Stakeholders	Study Disputes/Request to Modify Study Plan due	April 8, 2025	5.15(c)(4)
Licensee	Responses to Disputes/Study Requests	May 8, 2025	5.15(c)(5)
FERC	Director's Determination on Disagreements/Amendments	June 7, 2025	5.15(c)(6)
Licensee	Conduct Second Year of Studies, if needed	Spring/Summer 2025	5.15(a)
Licensee	File Updated Study Report (USR), if necessary	February 7, 2026	5.15(f)
Stakeholders	USR Meeting	~ February 22, 2026 (meeting date TBD)	5.15(f)
Licensee	USR Meeting Summary	~ March 9, 2026	5.15(f)
Licensee	File DLA	November 1, 2025	5.16(a)
Stakeholders	Comments on DLA due	January 30, 2026	5.16(e)
Licensee	File Final License Application	March 31, 2026	5.17

## **7.0 REFERENCES**

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Anfinson, Scott F. 2011. State Archaeologist's Manual for Archaeological Projects in Minnesota. Office of State Archaeologist, St. Paul.

Anfinson, Scott F. 2005. SHPO Manual for Archaeological Projects in Minnesota. Minnesota Historical Society, St. Paul.

## **Appendix A**

### **Little Falls Water Quality Study Report**

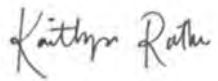


# Little Falls Hydroelectric Project Water Quality Study

Minnesota Power

Project number: 60731187

October 31, 2024



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# 1. Introduction and Background

## 1.1 Introduction

Allete, Inc., doing business as Minnesota Power (“MP” or “Licensee”), is the Licensee of the Little Falls Hydroelectric Project (Little Falls Project) (FERC No. 2532). The Little Falls Project is licensed by the Federal Energy Regulatory Commission (“FERC” or “Commission”) under the authority granted to FERC by Congress through the Federal Power Act (FPA), 16 United States Code (USC) §791(a), et seq., to license and oversee the operation of non-federal hydroelectric projects on jurisdictional waters and/or federal land. There are no federal lands associated with the Little Falls Project. The Little Falls Project FERC license was issued October 27, 1993. The current operating license for the Little Falls Project expires on March 31, 2028. The Licensee is using the Commission’s Integrated Licensing Process (ILP) to relicense the Little Falls Project.

This report describes the methods and results of the approved Water Quality Study (Study) conducted as part of obtaining a new license for the Little Falls Project.

## 1.2 Background

The Little Falls Project operates as a 4.72-megawatt (MW) run-of-river (ROR) facility located on the Mississippi River in the City of Little Falls in Morrison County, Minnesota. On March 30, 2023, Minnesota Power initiated the ILP by filing a Pre-Application Document (PAD) and Notice of Intent (NOI) with the Commission. Major ILP milestones to-date are presented in **Table 1-1**.

**Table 1-1. Major ILP milestones to-date.**

Date	Milestone
03/30/2023	PAD and NOI Filed
05/26/2023	Scoping Document 1 (SD1) Issued by FERC
06/21-06/22/2023	FERC Agency and Public Scoping Meetings Conducted
09/08/2023	Scoping Document 2 (SD2) Issued by FERC
09/08/2023	Proposed Study Plan (PSP) Filed
10/11/2023	PSP Meeting Conducted
01/09/2024	Revised Study Plan (RSP) Filed
01/31/2024	FERC Issues Study Plan Determination (SPD)

## 2. Study Goals and Objectives

The goal of the Water Quality Study is to evaluate dissolved oxygen (DO) and water temperature conditions of both upstream and downstream locations of the Little Falls Project to determine if they meet state water quality standards.

The objectives of the Water Quality Study are:

- a) Document the DO concentration and temperature of water entering the project intake;
- b) Identify the degree and timing of any stratification that may occur;
- c) Identify temporal variation in DO and water temperature;
- d) Identify any instances where DO and water temperature levels do not meet applicable state standards; and
- e) Identify any differences in DO and water temperature in the river downstream of the Little Falls Project.

The Study utilized standard methodologies that are consistent with other water quality monitoring efforts conducted at hydropower projects throughout the region. The specific details and methods included in this Study were outlined in the Revised Study Plan (RSP) which was approved by the FERC in February 2024.

The State of Minnesota has established water quality standards (Minnesota Statute Chapter 7050.0220) to protect water resources for uses such as fishing, swimming, other water recreation activities, and to sustain aquatic life. Such water quality standards are provided below in **Table 2-1**.

**Table 2-1. Water Quality Standards**

Parameter	Numeric Criteria
Dissolved Oxygen (milligram per liter [mg/L])	Daily minimum of 5.0 mg/L
Temperature (degree Fahrenheit [°F])	Temperature must not exceed three degrees Fahrenheit above natural temperature in lakes and five degrees Fahrenheit above natural temperature in streams, based on monthly average of maximum daily temperatures, and shall not exceed a daily average temperature of 86 degrees Fahrenheit. <sup>1</sup>

Source: Minnesota Rules Statute 7050.0220

## 3. Study Area

The Study Area is comprised of the Little Falls Project located on the Mississippi river south of State Highway 27 in Little Falls, Minnesota and divided into three separate monitoring locations at the Little Falls Project (**Figure 3-1**) and their GPS coordinates included:

- Forebay – 45.975055, -94.369336

<sup>1</sup> Temperature must not exceed (approximately) 1.7 degrees Celsius above natural temperature in lakes and 2.8 degrees Celsius above natural temperature in streams, based on monthly average of maximum daily temperatures, and shall not exceed a daily average temperature of 30 degrees Celsius.

- Downstream of Powerhouse – 45.974376, -94.369131

- Downstream of Spillway – 45.975348, -94.366578.

Monitoring Locations are displayed on Figure 3-1 below:

**Figure 3-1.** Water quality sampling locations at Little Falls Project.



These three sampling locations match the locations identified in the FERC approved RSP (2024). The stations include conditions representative of slower pool and flowing channel conditions. The Forebay location is characterized as a pool habitat, while the Downstream of Spillway corresponds with conditions of a run, and the Downstream of Powerhouse location is characteristic of a riffle.

## 4. Methodology

From June 2024, through September 2024, personnel mobilized to the Little Falls Project to collect water quality parameters approximately bi-monthly (every other week) at the three locations at the Little Falls Site, outlined above. There were eight (8) total sampling event from June to September 2024. The specific sampling events occurred on the dates listed:

- June 11, 2024
- June 26, 2024
- July 9, 2024
- July 25, 2024
- August 8, 2024
- August 23, 2024
- September 13, 2024
- September 25, 2024

Dissolved oxygen concentration and temperature were measured at multiple depths at each sampling location. At the upstream Forebay location DO and temperature were collected at 1-meter intervals in the water column from the surface to the bottom. At the Downstream of [the] Spillway and Powerhouse locations, DO and temperature measurements were taken from the bottom of the water column and the corresponding depths at each location were recorded. A YSI ProODO equipped with a single probe containing a temperature, DO, and barometer probe, serial number 21A101948, was used for all sampling events. The DO probe was calibrated before each monitoring event. The calibration method used was a percent saturation air calibration method specified in YSI's ProODO User Manual.

Ambient air temperature and current weather conditions at the Little Falls Project were recorded the day measurements were collected. Discharge, stream water level elevation, and gauge height were obtained from the United States Geological Survey (USGS) site 05267000 Mississippi River near Royalton, MN website. The field sampling sheets, and calibration records are provided in this report as **Appendix A**. Site photos from the Study are provided in **Appendix B**. USGS stream gauge data are provided in **Appendix C**.

## 5. Study Results

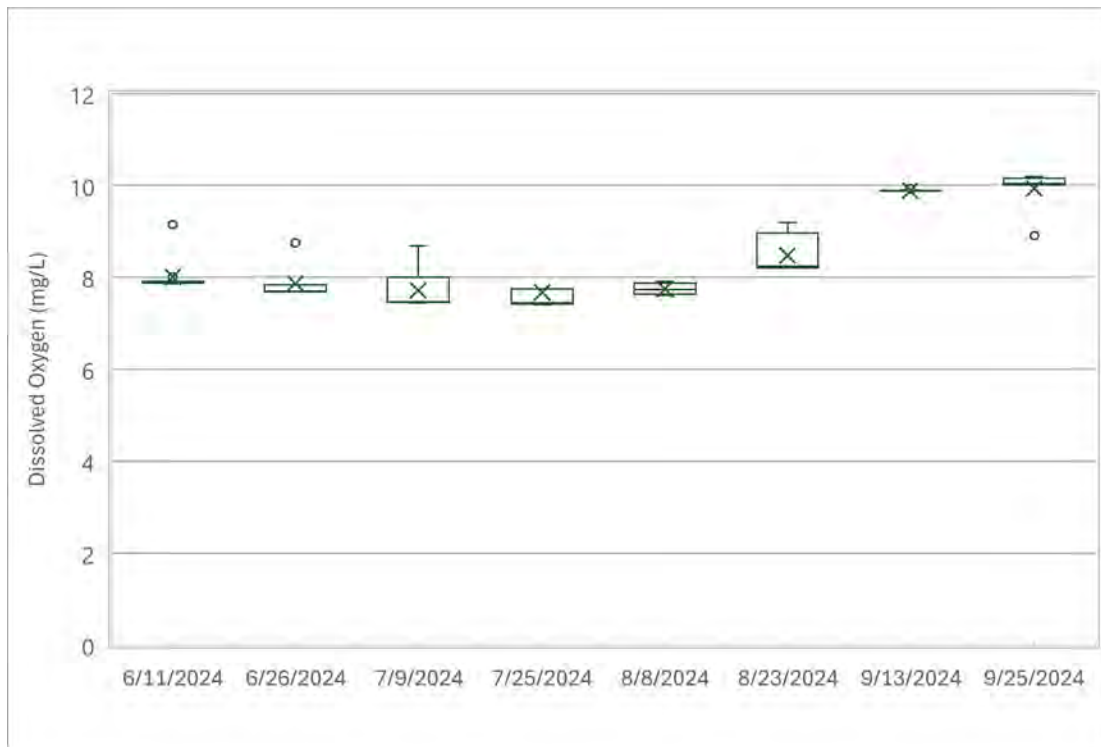
Dissolved oxygen, temperature, river discharge, and water elevation data were collected eight (8) times over the course of the Study. River discharge during the Little Falls Project ranged from 2380-14,200 cubic feet per second (cfs) over the monitoring period. Water elevation of the Mississippi River ranged from 1028.06-1032.11 feet above NAVD 1988. Graphs depicting USGS data from the Study period are included in **Appendix C**. Minnesota Power provided pond and tail level elevations at the Little Falls dam throughout the study period, this data is included in **Appendix D**. The Forebay location was a deeper site, and measurements were collected at 1-meter intervals. The Downstream of Spillway and Downstream of Powerhouse locations were both less than 1 meter deep, and measurements were taken at the bottom of the water column. See **Appendix E** for all data points collected during the Study and used in this report.

Mean DO concentration across the sites ranged from 8.31 to 8.78 milligrams per liter (mg/L) and mean water temperature ranged from 20.86 to 21.2 degrees Celsius. Differences in DO between sites were minimal. The highest mean DO concentration occurred at the Downstream of Spillway location and the lowest occurred at the Forebay location. Differences in temperature at sites were also minimal, the highest mean water temperature occurring at the Downstream of the Powerhouse location, and the lowest mean water temperature at the Downstream of the Spillway location (**Table 5-1**). Median DO increased throughout the course of the study (**Figure 5-1**). Compared to water quality objectives outlined for the study in **Table 2-1**, DO was above the daily minimum of 5.0 mg/L at all depths, at all locations, on all monitoring dates. Temperature also remained below the standard of 86 F (30 C). Compared to monthly

averages of maximum daily temperatures in the area (**Appendix F**), all monitoring dates for each month at all sites were below the maximum daily monthly averages for June (75.8 F, 24.3 C), July, (80.6 F, 27 C), August (77.2 F, 25.1 C), and September (78.1 F, 25.6 C), respectively. Temperature data was obtained from the National Weather Service at weather.gov for the station in Rice, Minnesota located 18 miles south of Little Falls (United States, 2024).

**Table 5-1.** Mean DO concentration and water temperature at each sampling location for 8 sampling events. Number in parenthesis is one standard error of the mean.

Sampling Location	Dissolved Oxygen (mg/L)	Water Temperature (degrees C)	Number of observations
Forebay	8.31 (0.14)	20.91 (0.21)	49
Downstream of Spillway	8.78 (0.24)	20.86 (0.75)	8
Downstream of Powerhouse	8.73 (0.33)	21.20 (0.56)	8



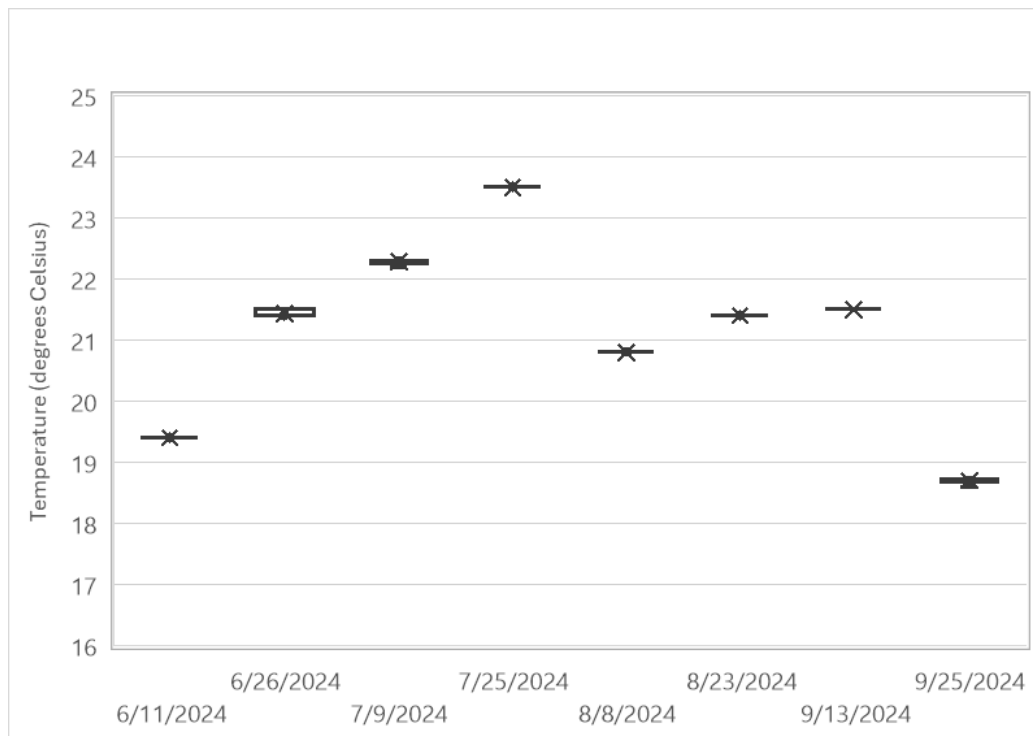
**Figure 5-1.** Boxplot showing DO summary statistics for all sampling locations at the Little Falls Project. The center “X” represents the median, the lower and upper hinges correspond to the first and third quartiles, and outliers are represented by the green dots. Data points were considered outliers if they fell outside 1.5 times the inner quartile range.

## 5.1 Forebay

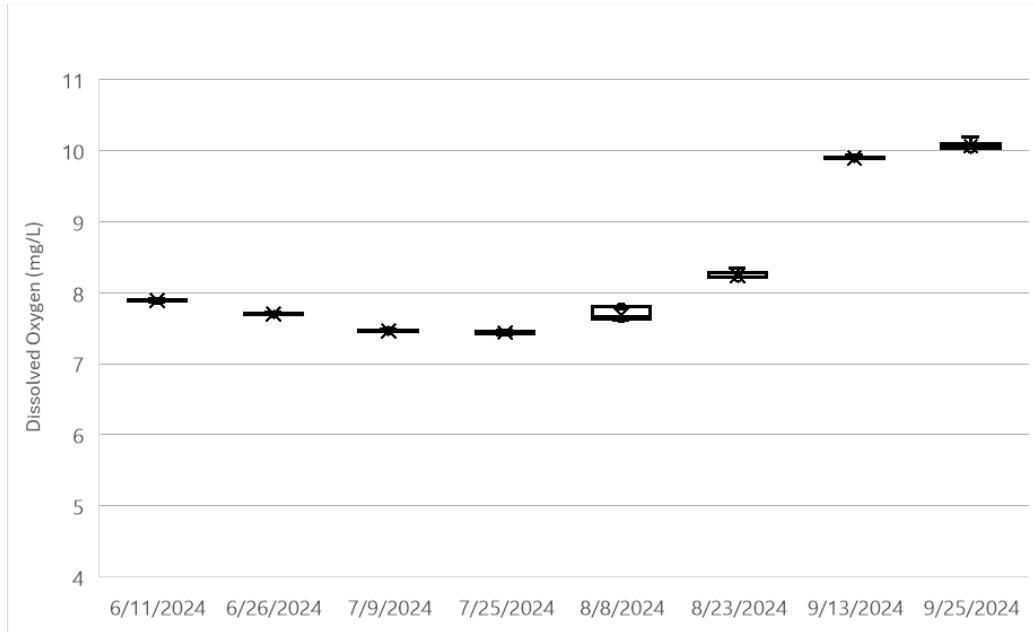
The Forebay location is located upstream of the Little Falls dam. Temperature and DO measurements were taken up to 9 meters below the water surface during the Study. Total depth measurements at the Forebay location varied throughout the duration of the study period from 4 to 9 meters. Minnesota Power provided pond level elevations in NGVD29 for the Little Falls Dam. While some depth variation was noted, pond level elevations show only a slight variation at the Forebay from 1106.84 to 1107.09 ft above NGVD29 (**Appendix D**). It is expected that the large variation in measurements can be attributed to difficulties feeling the bottom of the Forebay location. This accounts for the large depth variation noted at the first event, after which field staff purchased a weight to add to the probe to more accurately locate the water bottom. Subsequent interference is presumably current related. Temperatures at the Forebay location ranged from 18.6 to 23.5 degrees Celsius. Water temperatures increased over the course of the Study period until late July (**Figure 5-2**) corresponding with an increase in air temperature over the summer months. An approximately 3-degree Celsius drop in water temperature was observed between the late July and early August measurements, followed by a moderate increase in water temperatures from August to early September, which again corresponded with variations in air temperatures observed. Overall water temperatures do have a decreasing trend to the end of the Study period.

Dissolved oxygen measurements at the Forebay site ranged from 7.41 to 10.18 mg/L with the lowest readings on July 25, 2024 (**Figure 5-3**). Dissolved oxygen measurements were all above the Class 2B warmwater stream standard of 5.0 mg/L.

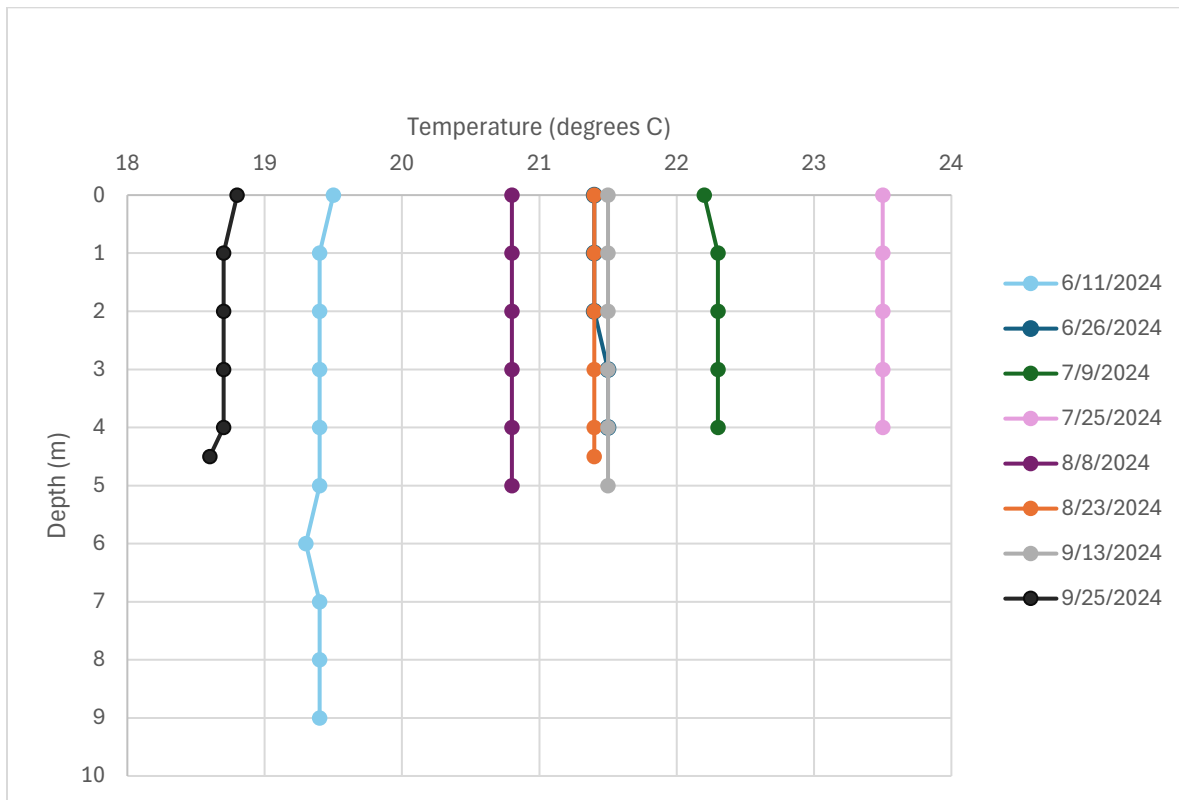
Dissolved oxygen and temperature profiles taken during each sampling event generally show a well-mixed site, with the small exception of the August (8 and 23, 2024) and late September (25, 2024) events where DO concentrations were observed to be slightly higher at depth than the rest of the water column (**Figure 5-4, Figure 5-5**).



**Figure 5-2.** Median temperature for each sampling event at the Forebay site. Whiskers represent standard error.



**Figure 5-3.** Median DO concentrations (mg/L) for each sampling event at the Forebay site. Whiskers represent standard error.



**Figure 5-4.** Temperature profiles at the Forebay site for each sampling event.

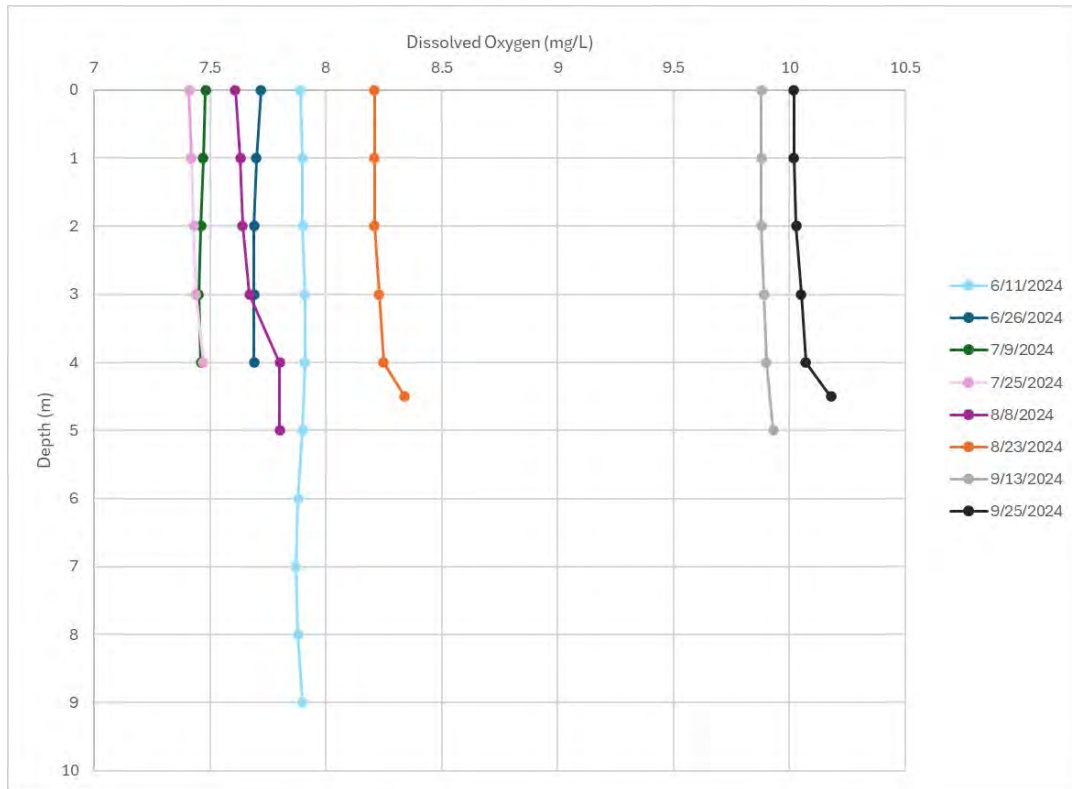
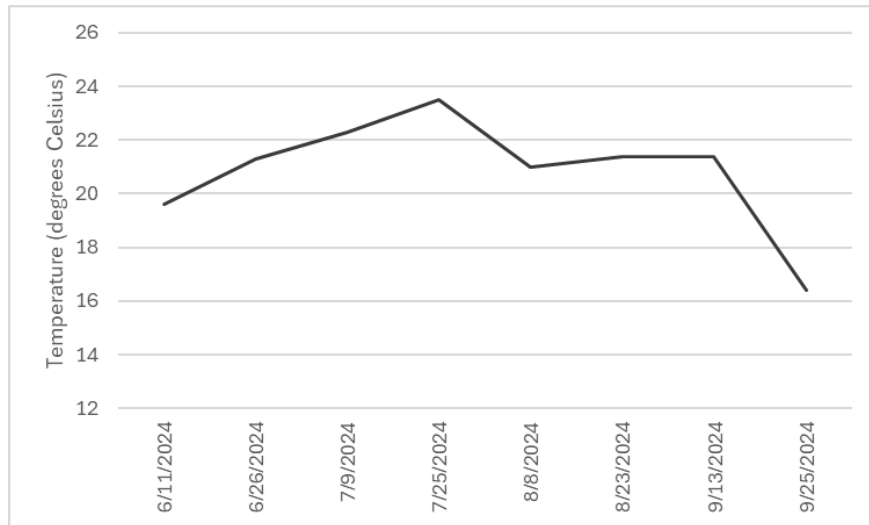


Figure 5-5. Dissolved oxygen profiles at the Forebay site for each sampling event.

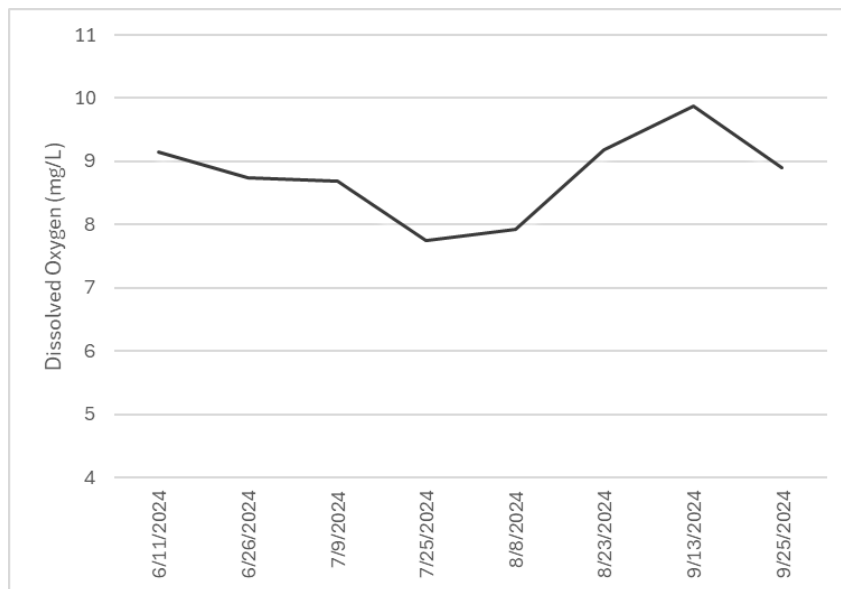
## 5.2 Downstream of Spillway

The Downstream of Spillway site is located downstream of the Little Falls dam. Temperature and DO measurements were taken up to 3 feet below the water surface during the Study. Water temperatures at the Downstream of Spillway site ranged from 16.7 to 23.5 degrees Celsius. Water temperature generally increased over the course of the Study until late July (Figure 5-6) corresponding to an increase in air temperatures over the summer months. Water temperatures reached a maximum during the July 25, 2024, sampling event. Water temperatures decreased over the final four sampling events, with a moderate increase noted from the August 8, 2024, sampling event to the September 13, 2024, sampling event.

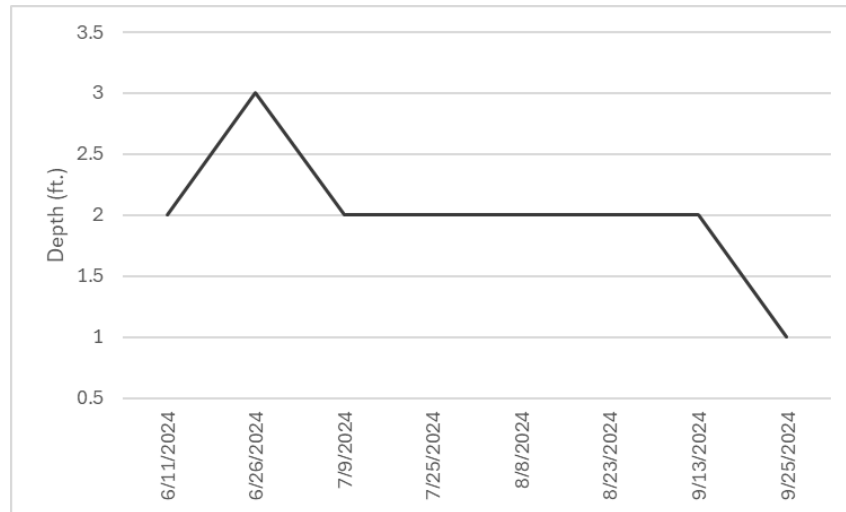
Dissolved oxygen measurements at the Downstream of Spillway site ranged from 7.75 to 9.88 mg/L. Dissolved oxygen measurements were all above the Class 2B stream standard on all sampling events (Figure 5-7). Measurements of temperature and DO were generally taken at the same depths at the Downstream of Spillway site, with a slightly deeper water column noted on the June 26, 2024, and a slightly shallower water column on the September 25, 2024, sampling event, which corresponds to heavy precipitation in the early parts of the Study, and much lower precipitation levels present towards the end of the Study (Figure 5-8).



**Figure 5-6.** Temperature (degrees Celsius) at the Downstream of Spillway location across each sampling event.



**Figure 5-7.** Dissolved oxygen (mg/L) at the Downstream of Spillway location across each sampling event.

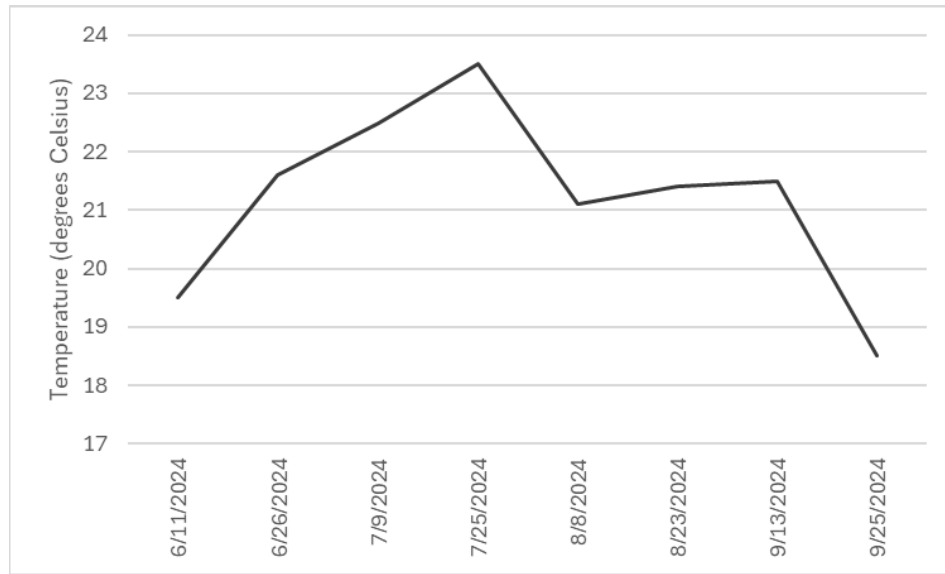


**Figure 5-8.** Depth (feet) of water bottom at the Downstream of Spillway location across each sampling event.

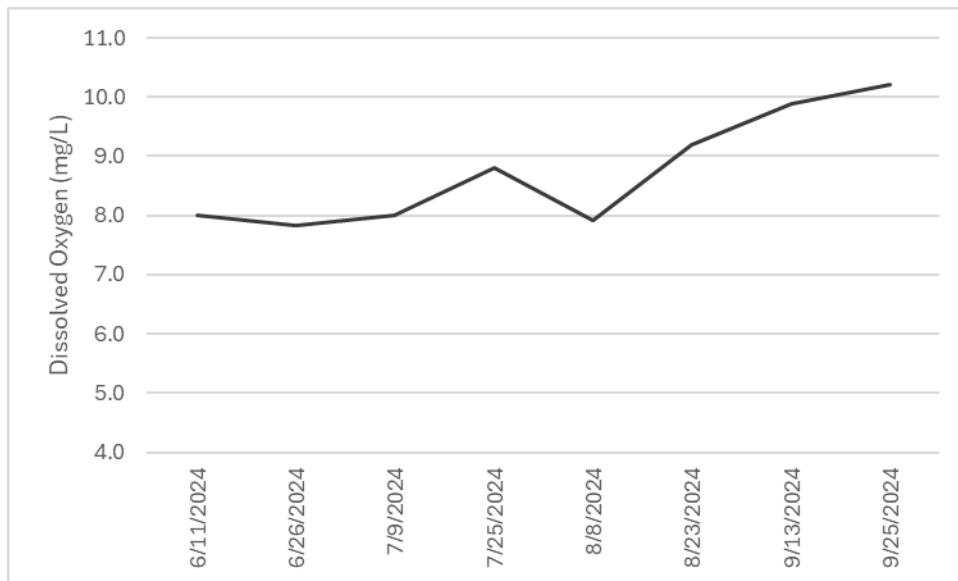
### 5.3 Downstream of Powerhouse

The Downstream of Powerhouse is located downstream of the Little Falls dam. Dissolved oxygen and temperature measurements were taken up to 3 feet below the water surface during the Study. Water temperature measurements at the Downstream of Powerhouse location ranged from 18.5 to 23.5 degrees Celsius. Water temperature generally increased over the course of the Study until late July (**Figure 5-9**) corresponding with an increase in air temperatures over the summer months. Water temperatures decreased over the final four sampling events, with a moderate increase noted from the August 8, 2024, sampling event to the September 13, 2024, sampling event.

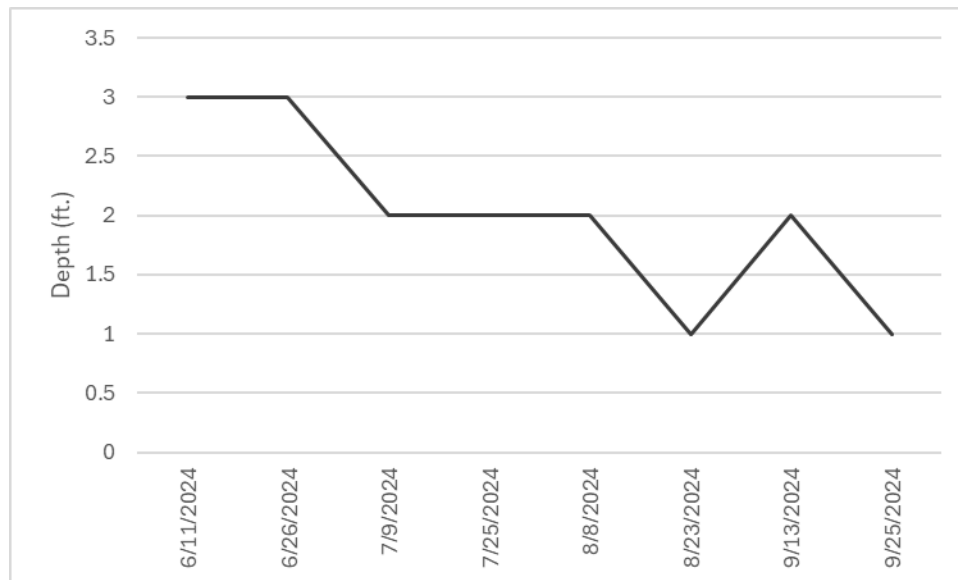
Dissolved oxygen measurements at the Downstream of Powerhouse site ranged from 7.84 to 10.2 mg/L with the lowest readings occurring on June 26, 2024. Dissolved oxygen measurements generally increased throughout the course of the Study, with a drop noted in the measurements taken on August 8, 2024 (**Figure 5-10**). Dissolved oxygen measurements were all above the Class 2B stream standard. Measurements of temperature and DO were generally taken at varying depths, with water depths generally decreasing over the course of the Study, with an increase in water depth observed in the September 13, 2024, sampling event (**Figure 5-11**)



**Figure 5-9.** Temperature (degrees Celsius) at the Downstream of Powerhouse location across each sampling event.



**Figure 5-10.** Dissolved oxygen (mg/L) at the Downstream of Powerhouse location across each sampling event.



**Figure 5-11.** Depth (feet) of water bottom at the Downstream of Powerhouse location across each sampling event.

## 6. Summary

A total of 65 DO and water temperature readings were collected over the course of the Study completed at the Little Falls Project from June through September 2024.

Overall, the observed readings were typical of well-mixed, warmwater rivers in Minnesota. Water temperature generally increased at all sites from June 11, 2024, to July 25, 2024, decreased from July 25, 2024, to August 8, 2024. There was a moderate increase in temperature noted from August 8, 2024, to September 13, 2024, followed by a drop in temperature from September 13, 2024, to September 25, 2024. Dissolved oxygen showed a modest decrease from June 11, 2024, to July 25, 2024, where DO subsequently increases over the remainder of the study until September 25, 2024.

Mean DO and temperature at the project intake were 8.31 mg/L and 20.91 degrees Celsius, respectively. Downstream of the Project, both at the Downstream of Spillway and Downstream of Powerhouse location DO was observed to be higher, at 8.78 mg/L and 8.73, respectively. Mean water temperatures at the river downstream locations were observed to be lower at the Downstream of Spillway location (20.86 C), and higher at the Downstream of Powerhouse location (21.20) compared to the project intake location. Overall mean water temperature varied by less than 1-degree Celsius.

Dissolved oxygen readings at all stations were above the Minnesota Class 2B minimum stream standard of 5.00 mg/L for all sampling events. Temperatures at each monitoring location throughout the course of the study remained below 86 degrees Fahrenheit (30C) and below 3 degrees Fahrenheit above natural temperature in lakes based on monthly average of maximum daily temperatures. This temperature data is included in **Appendix F**.

There were a few instances of DO stratification at the Forebay location, but stratification was not strong and not a consistent occurrence throughout the duration of the Study.

## 7. References

Minnesota Power (2024). Revised Study Plan for the Little Falls Project (FERC P-2535), Sylvan Project (FERC P-2454), and Pillager Project (FERC P-2663). Prepared by Kleinschmidt Associates for ALLETE, Inc. January 2024.

United States. (2024, December 16) National Weather Service – NOWData NOAA Online Weather Data; Rice, MN. <https://www.weather.gov/wrh/Climate?wfo=mpx>

## Appendix A – Field Forms and Calibration

Allete Water Quality Study Field Form

Date: 6/11/2024  
 Ambient weather conditions: Clear, 65F  
 Field personnel onsite: Bill Brown  
 Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330  
Dissolved oxygen  
 Barometric pressure: 2977 inhg  
 Actual reading before DO% calibration is accepted: 95.20%  
 Reading in DO% calibration environment after calibration is complete: 99.50%  
 ODO gain in GLP record after calibration: 1.24 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
surface	1048	85.4/7.89	19.5	
1	1050	85.9/7.90	19.4	
2	1052	85.9/7.90	19.4	
3	1054	85.9/7.91	19.4	
4	1055	85.9/7.91	19.4	
5	1056	85.8/7.90	19.4	
6	1057	85.5/7.88	19.3	
7	1059	85.5/7.87	19.4	
8	1100	85.5/7.88	19.4	
9	1101	85.8/7.90	19.4	
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft.	1125	99.7/9.15	19.6	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
3 ft.	1115	87.2/8.00	19.5	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site

10:30 Level (ft.): 12.12      10:45 Water Level Elevation: 1031.31      10:45 Flow (cfs): 11500

Allete Water Quality Study Field Form

Date: 6/26/2024

Ambient weather conditions: Partly Cloudy, 70F

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 763.0 mmhg

Actual reading before DO% calibration is accepted: 104.70%

Reading in DO% calibration environment after calibration is complete: 100.40%

ODO gain in GLP record after calibration: 1.19 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
surface	1149	87.3/7.72	21.4	
1	1147	87.2/7.70	21.4	
2	1146	87.1/7.69	21.5	
3	1145	87.1/7.69	21.5	
4	1144	87.1/7.69	21.5	bottom
5				
6				
7				
8				
9				
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
3 ft.	1205	98.5/8.75	21.3	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
3 ft.	1156	88.8/7.84	21.6	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

11:45 Level (ft.): 12.92    11:45 Water Level 1032.11    11:30 Flow (cfs): 14200  
Elevation:

Allete Water Quality Study Field Form

Date: 7/9/2024

Ambient weather conditions:

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 761.7 mmhg

Actual reading before DO% calibration is accepted: 101.00%

Reading in DO% calibration environment after calibration is complete: 100.20%

ODO gain in GLP record after calibration: 1.18 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
surface	0952	86.0/7.48	22.2	
1	0951	85.9/7.47	22.3	
2	0950	85.8/7.46	22.3	
3	0949	85.6/7.45	22.3	
4	0948	85.8/7.46	22.3	bottom
5				
6				
7				
8				
9				
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	1005	100.0/8.69	22.3	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	954	92.3/8.00	22.5	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700

Other notes/comments:

Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

9:30 Level (ft.): 12.42 9:15 Water Level Elevation: 1031.61 9:30 Flow (cfs): 12500

Allete Water Quality Study Field Form

Date: 7/25/2024

Ambient weather conditions: Clear 71F

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 769.1 mmhg

Actual reading before DO% calibration is accepte 102.80%

Reading in DO% calirbation environment after calibration is complete: 101.20%

ODO gain in GLP record after calibration: 1.17 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
surface	9:55	87.2/7.41	23.5	
1	9:54	87.3/7.42	23.5	
2	9:53	87.5/7.43	23.5	
3	9:52	87.6/7.44	23.5	
4	9:51	87.8/7.47	23.5	bottom
5				
6				
7				
8				
9				
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
2 ft	10:00	91.2/7.75	23.5	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
2 ft	10:10	100.7/8.81	23.5	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site mesurements

10:15 Level (ft.): 10.40 10:15 Water Level Elevation: 1029.59 10:15 Flow (cfs): 6360

Allete Water Quality Study Field Form

Date: 8/8/2024

Ambient weather conditions:

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressur 765.3 mmhg

Actual reading before DO% calibration is accepted: 98.60%

Reading in DO% calibraton environment after calibration is complete: 100.70%

ODO gain in GLP record after calibration: 1.19 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
surface	9:06	85.0/7.61	20.8	
1	9:05	85.3/7.63	20.8	
2	9:04	85.4/7.64	20.8	
3	9:03	85.7/7.67	20.8	
4	9:02	87.1/7.80	20.8	
5	9:01	87.1/7.80	20.8	
6				
7				
8				
9				
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	9:20	89.0/7.92	21.0	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	9:12	88.8/7.91	21.1	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site mesurements

9:15 Level (ft.): 11.00 9:15 Water Level Elevation: 1030.19 9:15 Flow (cfs) 8040

Allete Water Quality Study Field Form

Date: 8/23/2024  
 Ambient weather conditions: overcast 67  
 Field personnel onsite: Bill Brown  
 Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330  
Dissolved oxygen  
 Barometric pressure: 763.4 mmhg  
 Actual reading before DO% calibration is accepted: 101.70%  
 Reading in DO% calibration environment after calibration is complete: 100.40%  
 ODO gain in GLP record after calibration: 1.18 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
surface	9:35	92.7/8.21	21.4	
1	9:34	92.8/8.21	21.4	
2	9:33	92.8/8.21	21.4	
3	9:32	93.0/8.23	21.4	
4	9:31	93.1/8.25	21.4	
4.5	9:30	94.1/8.34	21.4	bottom
6				
7				
8				
9				
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	9:47	103.7/9.18	21.4	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
1 ft	9:38	104.0/9.20	21.4	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

9:15 Level (ft.): 10.07 9:15 Water Level Elevation: 1029.26 9:45 Flow (cfs): 5500

Allete Water Quality Study Field Form

Date: 9/13/2024

Ambient weather conditions: clear 66F

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 764.3 mmhg

Actual reading before DO% calibration is accepted: 101.60%

Reading in DO% calibration environment after calibration is complete: 100.60%

ODO gain in GLP record after calibration: 1.17 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
surface	9:14	111.9/9.88	21.5	
1	9:13	111.9/9.88	21.5	
2	9:12	111.9/9.88	21.5	
3	9:11	112.0/9.89	21.5	
4	9:10	112.1/9.90	21.5	
4.5	9:09	112.4/9.93	21.5	Bottom
6				
7				
8				
9				
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	9:30	111.9/9.88	21.4	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	9:19	112.0/9.89	21.5	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

9:15 Level (ft.): 8.98 9:15 Water Level Elevation: 1028.17 9:15 Flow (cfs): 2620

Allete Water Quality Study Field Form

Date: 9/25/2024

Ambient weather conditions: clear 52F

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 763.4 mmhg

Actual reading before DO% calibration is accepted: 100.50%

Reading in DO% calibration environment after calibration is complete: 100.40%

ODO gain in GLP record after calibration: 1.17 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
surface	8:27	107.4/10.02	18.8	
1	8:26	107.4/10.02	18.7	
2	8:25	107.5/10.03	18.7	
3	8:24	107.7/10.05	18.7	
4	8:23	107.8/10.07	18.7	
4.5	8:22	108.6/10.18	18.6	Bottom
6				
7				
8				
9				
10				
11				
12				

Downstream of Spillway:

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
1 ft	8:43	91.4/8.91	16.7	

Downstream of Powerhouse

Bottom of Water	Time	Dissolved Oxygen %/(mg/L)	Temperature (C°)	Notes/Comments
1 ft	8:31	108.7/10.20	18.5	

Took photos at each location (Forebay, Downstream of Spillway, Downstream of Powerhouse)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

8:15 Level (ft.): 8.87 8:15 Water Level Elevation: 1028.06 8:30 Flow (cfs): 2380

## Appendix B – Site Photos

Client Name: Allete, Inc.

Site Location:  
Little Falls, MN

Project No. 60731187

**Photo No.**  
1**Date:**  
6/11/24**Location of Photo:**  
Little Falls Forebay**Description:**

Taken from the walkway on the upriver side of power plant, according to the suggested location on map.

**Photo No.**  
2**Date:**  
6/11/24**Location of Photo:**  
Little Falls downstream  
of powerhouse**Description:**

Collected downstream of power plant on the west side of the river, according to the suggested area on the map.



**Client Name:** Allete, Inc.**Site Location:**  
Little Falls, MN**Project No.** 60731187**Photo No.**  
3**Date:**  
6/11/24**Location of Photo:**  
Little Falls downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.

**Photo No.**  
4**Date:**  
6/26/24**Location of Photo:**  
Little Falls Forebay**Description:**

Taken from the walkway  
on the upriver side of  
power plant, west of the  
suggested location on  
map, due to not having  
access beyond the  
fence



**Client Name:** Allete, Inc.**Site Location:**  
Little Falls, MN**Project No.** 60731187**Photo No.**  
5**Date:**  
6/26/24**Location of Photo:**  
Little Falls downstream  
of powerhouse**Description:**

Collected downstream  
of power plant on the  
west side of the river,  
according to the  
suggested area on the  
map.

**Photo No.**  
6**Date:**  
6/26/24**Location of Photo:**  
Little Falls  
downstream of  
spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.



Client Name: Allele, Inc.

Site Location:  
Little Falls, MN

Project No. 60731187

Photo No. 7 Date: 7/9/24

Location of Photo:  
Little Falls Forebay**Description:**

Taken from the walkway on the up river side of power plant, at the suggested location according to the map.



Photo No. 8 Date: 7/9/24

Location of Photo:  
Little Falls  
downstream of  
powerhouse**Description:**

Collected  
downstream of power  
plant on the west side  
of the river, according  
to the suggested area  
on the map.



Client Name: Allete, Inc.

Site Location:  
Little Falls, MN

Project No. 60731187

**Photo No.**  
9

**Date:**  
7/9/24

**Location of Photo:**  
Little Falls  
downstream of  
spillway

**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.



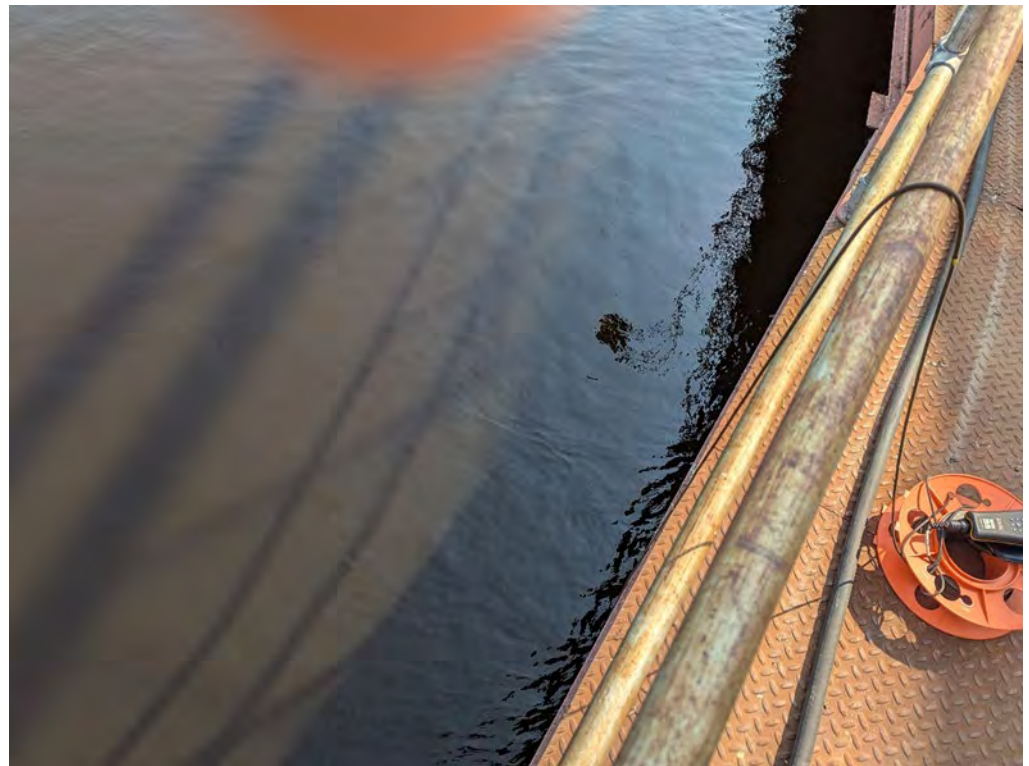
**Photo No.**  
10

**Date:**  
7/25/24

**Location of Photo:**  
Little Falls Forebay

**Description:**

Taken from the  
walkway on the up  
river side of power  
plant, at the  
suggested location  
according to the map.



Client Name: Allete, Inc.

Site Location:  
Little Falls, MN

Project No. 60731187

**Photo No.**  
11**Date:**  
7/25/24**Location of Photo:**  
Little Falls  
downstream of  
powerhouse**Description:**

Collected downstream  
of power plant on the  
west side of the river,  
according to the  
suggested area on the  
map.

**Photo No.**  
12**Date:**  
7/25/24**Location of Photo:**  
Little Falls  
downstream of  
spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.



Client Name: Allete, Inc.

Site Location:  
Little Falls, MN

Project No. 60731187

Photo No. 13 Date: 8/8/24

Location of Photo:  
Little Falls Forebay**Description:**

Taken from the walkway on the up river side of power plant, at the suggested location according to the map.



Photo No. 14 Date: 8/8/24

Location of Photo:  
Little Falls  
downstream of  
powerhouse**Description:**

Collected downstream of power plant on the west side of the river, according to the suggested area on the map.



Client Name: Allete, Inc.

Site Location:  
Little Falls, MN

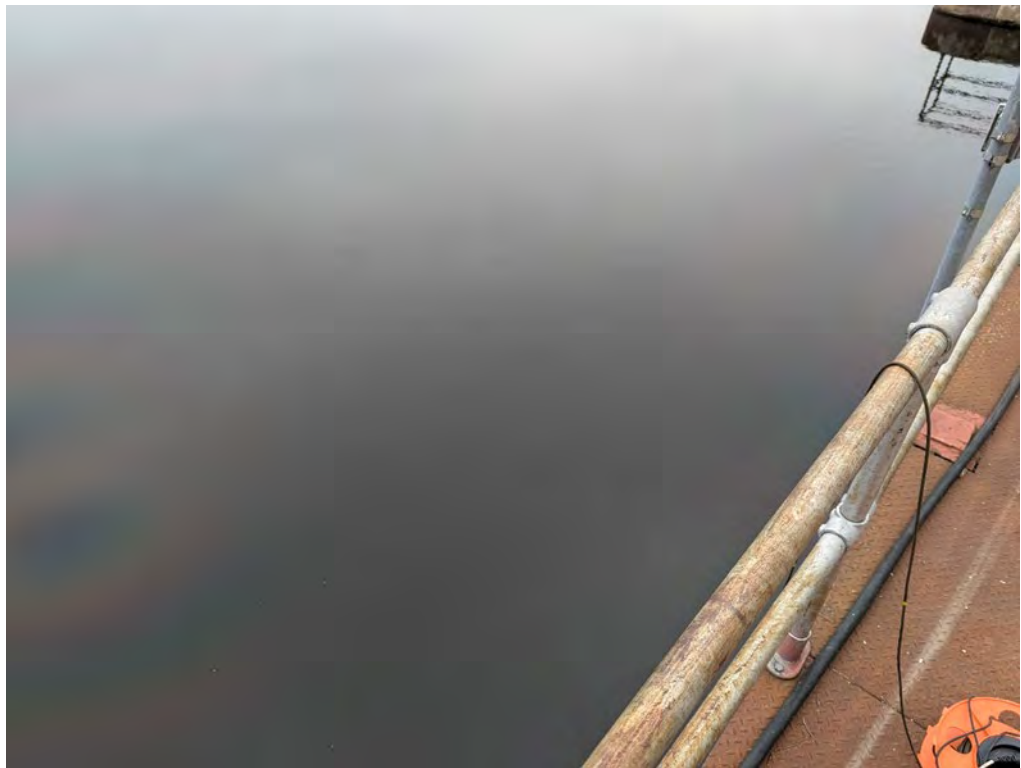
Project No. 60731187

**Photo No.**  
15**Date:**  
8/8/24**Location of Photo:**  
Little Falls downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the location  
suggested on the map.

**Photo No.**  
16**Date:**  
8/23/24**Location of Photo:**  
Little Falls Forebay**Description:**

Taken from the  
walkway on the up  
river side of power  
plant, at the  
suggested location  
according to the map.



Client Name: Allele, Inc.

Site Location:  
Little Falls, MN

Project No. 60731187

**Photo No.**  
17**Date:**  
8/23/24**Location of Photo:**  
Little Falls downstream  
of powerhouse**Description:**

Collected downstream of  
power plant on the west  
side of the river,  
according to the  
suggested area on the  
map.

**Photo No.**  
18**Date:**  
8/23/24**Location of Photo:**  
Little Falls  
downstream of  
spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.



**Client Name:** Allete, Inc.**Site Location:**  
Little Falls, MN**Project No.** 60731187**Photo No.**  
19**Date:**  
9/13/24**Location of Photo:**  
Little Falls Forebay**Description:**

Taken from the walkway on the up river side of power plant, at the suggested location according to the map.

**Photo No.**  
20**Date:**  
9/13/24**Location of Photo:**  
Little Falls  
downstream of  
powerhouse**Description:**

Collected downstream of power plant on the west side of the river, according to the suggested area on the map.



Client Name: Allete, Inc.

Site Location:  
Little Falls, MN

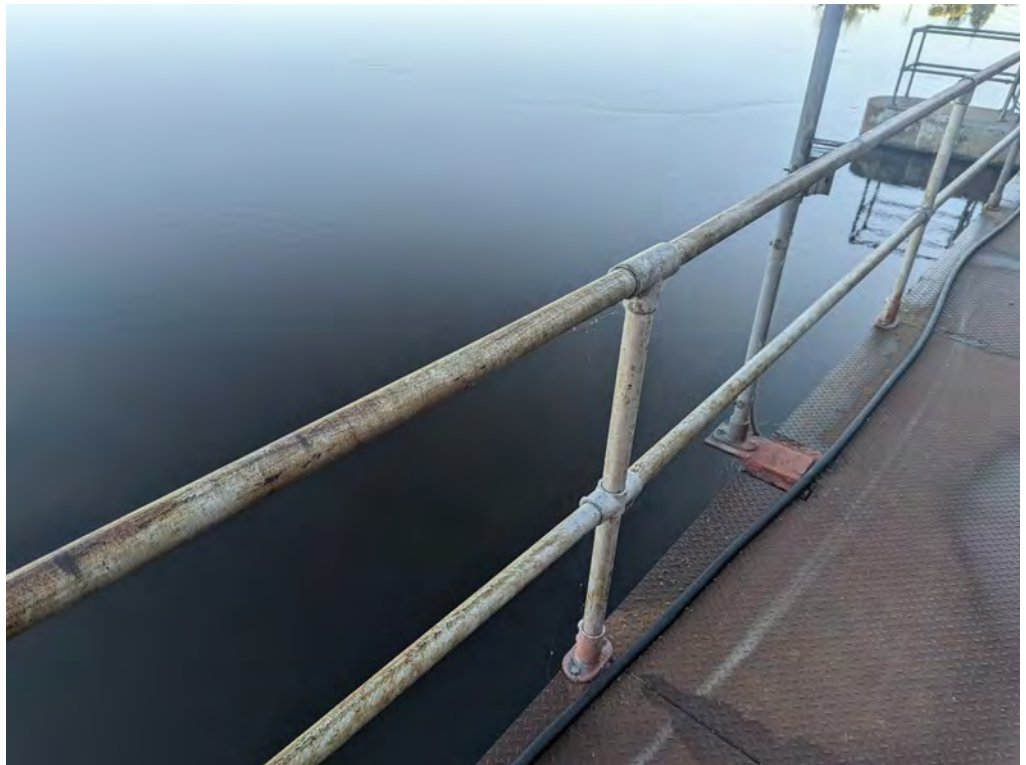
Project No. 60731187

**Photo No.**  
21**Date:**  
9/13/24**Location of Photo:**  
Little Falls downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the location  
suggested on the map.

**Photo No.**  
22**Date:**  
9/25/24**Location of Photo:**  
Little Falls Forebay**Description:**

Taken from the  
walkway on the up  
river side of power  
plant, at the  
suggested location  
according to the map.



Client Name: Allete, Inc.

Site Location:  
Little Falls, MN

Project No. 60731187

**Photo No.**  
23**Date:**  
9/25/24**Location of Photo:**  
Little Falls downstream  
of powerhouse**Description:**

Collected downstream of  
power plant on the west  
side of the river,  
according to the  
suggested area on the  
map.

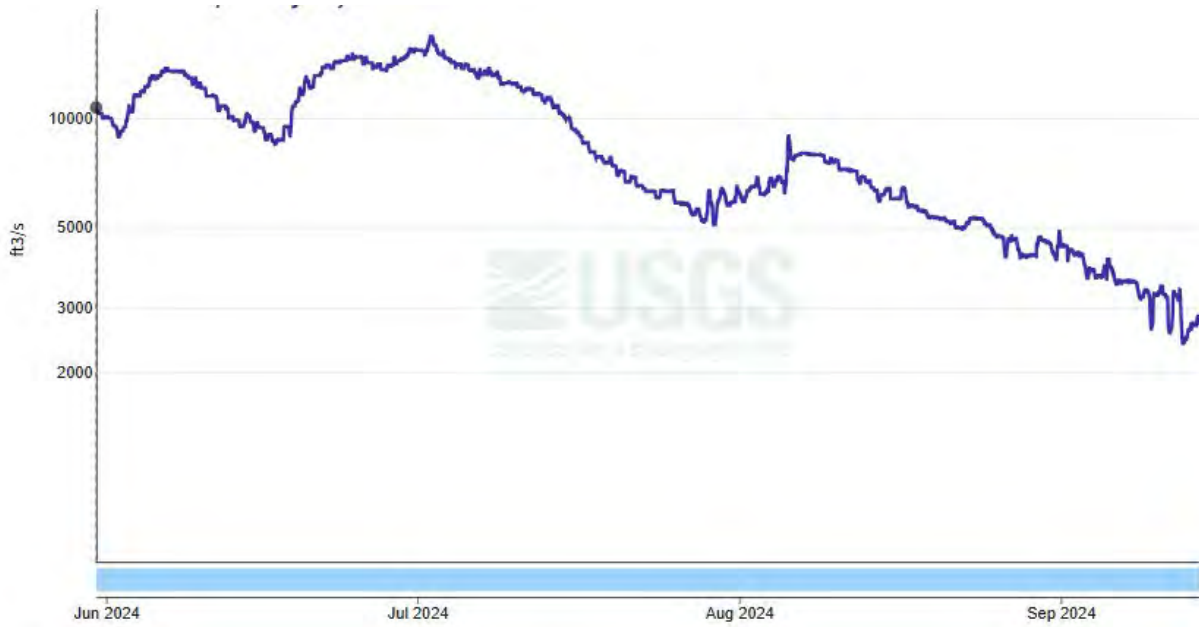
**Photo No.**  
24**Date:**  
9/25/24**Location of Photo:**  
Little Falls  
downstream of  
spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.

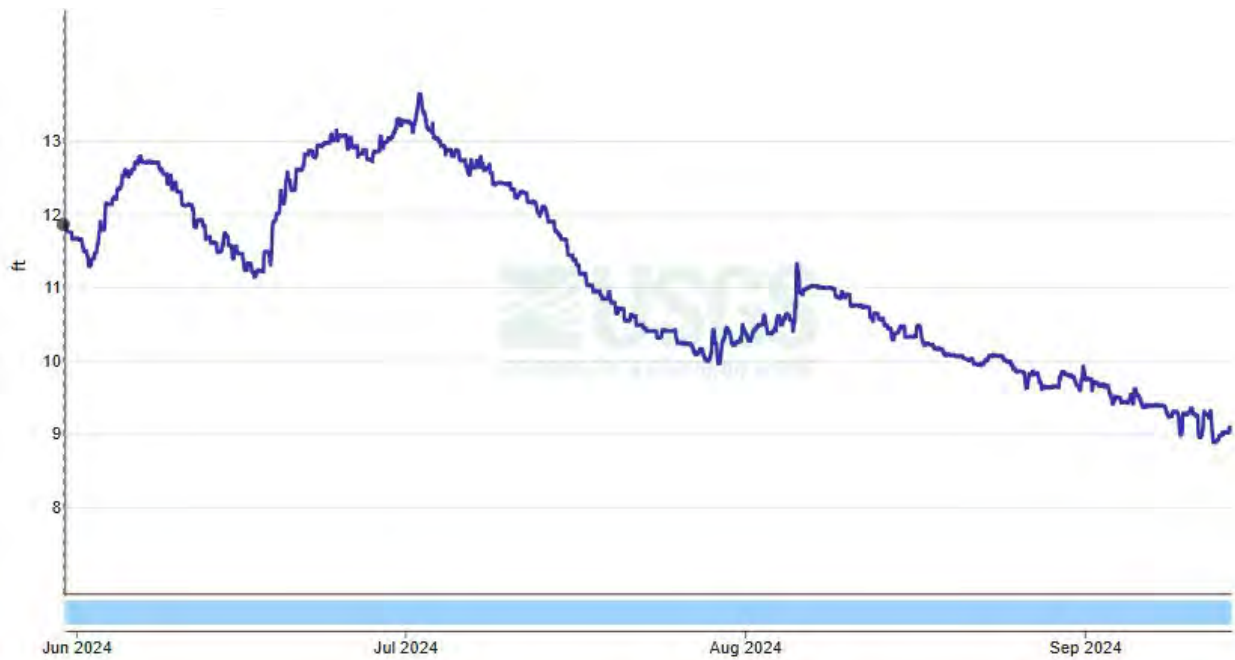


## **Appendix C – USGS Stream Gauge 05267000 Mississippi River near Royalton, MN Data**

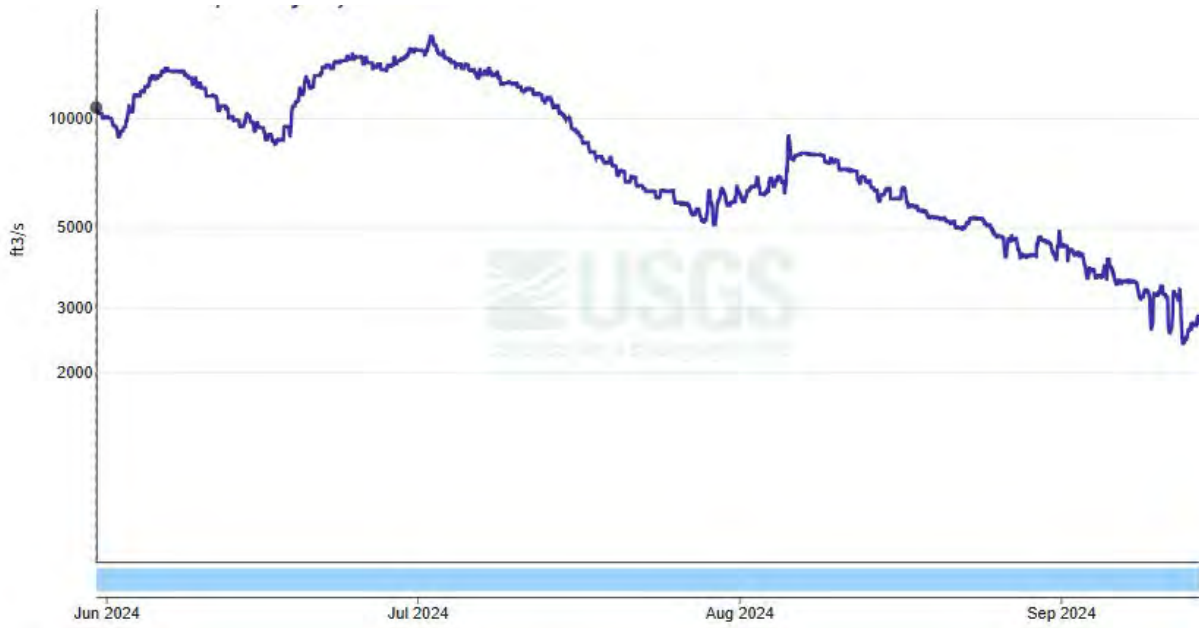
Mississippi River near Royalton, MN – 05267000 Stream water level elevation above NAVD 1988, in ft.



Mississippi River near Royalton, MN – 05267000 Gauge height in ft.



Mississippi River near Royalton, MN – 05267000 Discharge in cubic feet per second



## Appendix D – Minnesota Power Site Data

Date & Time	LITTLE FALLS POND LEVEL HOURLY AVERAGE (NGVD 29)	LITTLE FALLS TAIL LEVEL HOURLY AVERAGE (NGVD 29)	LITTLE FALLS TOTAL STATION FLOW HOURLY AVERAGE
11-Jun-24 10:00:00	1106.98	1086.91	10394
26-Jun-24 11:00:00	1106.84	1087.55	12847
09-Jul-24 09:00:00	1107.05	1087.14	11033
25-Jul-24 09:00:00	1107.02	1085.68	5528
08-Aug-24 09:00:00	1107.09	1086.03	6172
23-Aug-24 09:00:00	1107.07	1084.69	4152
13-Sep-24 09:00:00	1106.97	1084.65	2180
25-Sep-24 08:00:00	1106.97	1084.50	1875
Minimum	1106.84		
Maximum	1107.09		

## Appendix E – All Site Data

## Forebay - Little Falls

Monitoring Event Date	Time	Depth (m)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Temperature( Celcius)
6/11/2024	10:48	0	85.4	7.89	19.5
6/11/2024	10:50	1	85.9	7.9	19.4
6/11/2024	10:52	2	85.9	7.9	19.4
6/11/2024	10:54	3	85.9	7.91	19.4
6/11/2024	10:44	4	85.9	7.91	19.4
6/11/2024	10:56	5	85.8	7.9	19.4
6/11/2024	10:57	6	85.5	7.88	19.3
6/11/2024	10:59	7	85.5	7.87	19.4
6/11/2024	11:00	8	85.5	7.88	19.4
6/11/2024	11:01	9	85.8	7.9	19.4
6/26/2024	11:49	0	87.3	7.72	21.4
6/26/2024	11:47	1	87.2	7.7	21.4
6/26/2024	11:46	2	87.1	7.69	21.5
6/26/2024	11:45	3	87.1	7.69	21.5
6/26/2024	11:44	4	87.1	7.69	21.5
7/9/2024	9:52	0	86.0	7.48	22.2
7/9/2024	9:51	1	85.9	7.47	22.3
7/9/2024	9:50	2	85.8	7.46	22.3
7/9/2024	9:49	3	85.6	7.45	22.3
7/9/2024	9:48	4	85.8	7.46	22.3
7/25/2024	9:55	0	87.2	7.41	23.5
7/25/2024	9:54	1	87.3	7.42	23.5
7/25/2024	9:53	2	87.5	7.43	23.5
7/25/2024	9:52	3	87.6	7.44	23.5
7/25/2024	9:51	4	87.8	7.47	23.5
8/8/2024	9:06	0	85	7.61	20.8
8/8/2024	9:05	1	85.3	7.63	20.8
8/8/2024	9:04	2	85.4	7.64	20.8
8/8/2024	9:03	3	85.7	7.67	20.8
8/8/2024	9:02	4	87.1	7.8	20.8
8/8/2024	9:01	5	87.1	7.8	20.8
8/23/2024	9:35	0	92.7	8.21	21.4
8/23/2024	9:34	1	92.8	8.21	21.4
8/23/2024	9:33	2	92.8	8.21	21.4
8/23/2024	9:32	3	93	8.23	21.4
8/23/2024	9:31	4	93.1	8.25	21.4
8/23/2024	9:30	4.5	94.1	8.34	21.4
9/13/2024	9:14	0	111.9	9.88	21.5
9/13/2024	9:13	1	111.9	9.88	21.5
9/13/2024	9:12	2	111.9	9.88	21.5
9/13/2024	9:10	3	112	9.89	21.5

9/13/2024	9:11	4	112.1	9.9	21.5
9/13/2024	9:09	5	112.4	9.93	21.5
9/25/2024	8:27	0	107.4	10.02	18.8
9/25/2024	8:26	1	107.4	10.02	18.7
9/25/2024	8:25	2	107.5	10.03	18.7
9/25/2024	8:24	3	107.7	10.05	18.7
9/25/2024	8:23	4	107.8	10.07	18.7
9/25/2024	8:22	4.5	108.6	10.18	18.6

Downstream of Spillway - Little Falls

Monitoring Event Date	Time	Depth (ft)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Temperature( Celcius)
6/11/2024	11:25	2	99.7	9.15	19.6
6/26/2024	12:05	3	98.5	8.75	21.3
7/9/2024	10:05	2	100	8.69	22.3
7/25/2024	10:00	2	91.2	7.75	23.5
8/8/2024	9:20	2	89	7.92	21
8/23/2024	9:47	2	103.7	9.18	21.4
9/13/2024	9:30	2	111.9	9.88	21.4
9/25/2024	8:43	1	91.4	8.91	16.7

Downstream of Powerhouse - Little Falls

Monitoring Event Date	Time	Depth (ft)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Temperature( Celcius)
6/11/2024	11:15	3	87.2	8.0	19.5
6/26/2024	11:56	3	88.8	7.84	21.6
7/9/2024	9:54	2	92.3	8	22.5
7/25/2024	10:10	2	100.7	8.81	23.5
8/8/2024	9:12	2	88.8	7.91	21.1
8/23/2024	9:38	1	104	9.2	21.4
9/13/2024	9:19	2	112	9.89	21.5
9/25/2024	8:31	1	108.7	10.2	18.5

## Appendix F – Climatological Data; Rice, MN

**Climatological Data for RICE, MN - June 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-06-01	73	53	63.0	2.1	2	0	0.05	0.0	0
2024-06-02	77	54	65.5	4.3	0	1	0.00	0.0	0
2024-06-03	75	57	66.0	4.4	0	1	1.33	0.0	0
2024-06-04	78	60	69.0	7.1	0	4	0.00	0.0	0
2024-06-05	85	50	67.5	5.3	0	3	0.79	0.0	0
2024-06-06	76	54	65.0	2.5	0	0	0.01	0.0	0
2024-06-07	68	48	58.0	-4.8	7	0	0.00	0.0	0
2024-06-08	76	51	63.5	0.4	1	0	0.00	0.0	0
2024-06-09	75	51	63.0	-0.4	2	0	0.00	0.0	0
2024-06-10	69	43	56.0	-7.7	9	0	0.00	0.0	0
2024-06-11	73	48	60.5	-3.5	4	0	0.27	0.0	0
2024-06-12	79	54	66.5	2.2	0	2	0.00	0.0	0
2024-06-13	83	55	69.0	4.5	0	4	0.31	0.0	0
2024-06-14	81	52	66.5	1.7	0	2	0.00	0.0	0
2024-06-15	79	56	67.5	2.4	0	3	0.00	0.0	0
2024-06-16	71	61	66.0	0.7	0	1	0.59	0.0	0
2024-06-17	84	56	70.0	4.4	0	5	0.20	0.0	0
2024-06-18	72	54	63.0	-2.8	2	0	1.08	0.0	0
2024-06-19	83	58	70.5	4.5	0	6	0.47	0.0	0
2024-06-20	68	55	61.5	-4.8	3	0	0.16	0.0	0
2024-06-21	70	57	63.5	-3.0	1	0	0.03	0.0	0
2024-06-22	69	61	65.0	-1.7	0	0	0.05	0.0	0
2024-06-23	64	58	61.0	-5.9	4	0	0.14	0.0	0
2024-06-24	81	57	69.0	1.9	0	4	0.00	0.0	0
2024-06-25	84	62	73.0	5.7	0	8	0.00	0.0	0
2024-06-26	86	57	71.5	4.0	0	7	0.00	0.0	0
2024-06-27	75	51	63.0	-4.7	2	0	0.00	0.0	0
2024-06-28	73	55	64.0	-3.8	1	0	0.35	0.0	0
2024-06-29	78	59	68.5	0.5	0	4	0.00	0.0	0
2024-06-30	68	44	56.0	-12.1	9	0	T	0.0	0
<b>Sum</b>	2273	1631	-	-	47	55	5.83	0.0	-
<b>Average</b>	75.8	54.4	65.1	0.1	-	-	-	-	0.0
<b>Normal</b>	76.3	53.6	65.0	-	76	75	4.60	M	-

**Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).**

Max Temperature : 7am

Min Temperature : 7am

Precipitation : 7am

Snowfall : unknown

Snow Depth : 7am

**Climatological Data for RICE, MN - July 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-07-01	72	49	60.5	-7.8	4	0	0.00	0.0	0
2024-07-02	75	55	65.0	-3.4	0	0	0.13	0.0	0
2024-07-03	75	59	67.0	-1.6	0	2	0.00	0.0	0
2024-07-04	82	60	71.0	2.3	0	6	0.00	0.0	0
2024-07-05	72	58	65.0	-3.8	0	0	0.32	0.0	0
2024-07-06	76	55	65.5	-3.4	0	1	0.00	0.0	0
2024-07-07	81	57	69.0	0.0	0	4	0.14	0.0	0
2024-07-08	79	56	67.5	-1.6	0	3	0.00	0.0	0
2024-07-09	78	58	68.0	-1.2	0	3	0.08	0.0	0
2024-07-10	84	60	72.0	2.8	0	7	0.09	0.0	0
2024-07-11	80	59	69.5	0.2	0	5	0.05	0.0	0
2024-07-12	85	61	73.0	3.6	0	8	0.00	0.0	0
2024-07-13	85	65	75.0	5.6	0	10	0.00	0.0	0
2024-07-14	83	62	72.5	3.0	0	8	0.12	0.0	0
2024-07-15	88	65	76.5	7.0	0	12	0.11	0.0	0
2024-07-16	82	58	70.0	0.5	0	5	0.03	0.0	0
2024-07-17	78	51	64.5	-5.0	0	0	0.00	0.0	0
2024-07-18	73	50	61.5	-8.0	3	0	0.00	0.0	0
2024-07-19	79	52	65.5	-4.0	0	1	0.00	0.0	0
2024-07-20	81	58	69.5	0.0	0	5	0.00	0.0	0
2024-07-21	83	59	71.0	1.5	0	6	0.00	0.0	0
2024-07-22	80	60	70.0	0.5	0	5	0.00	0.0	0
2024-07-23	83	62	72.5	3.0	0	8	0.10	0.0	0
2024-07-24	73	52	62.5	-6.9	2	0	0.03	0.0	0
2024-07-25	77	52	64.5	-4.9	0	0	0.00	0.0	0
2024-07-26	81	53	67.0	-2.3	0	2	0.00	0.0	0
2024-07-27	87	68	77.5	8.2	0	13	0.00	0.0	0
2024-07-28	91	73	82.0	12.8	0	17	0.00	0.0	0
2024-07-29	88	67	77.5	8.4	0	13	0.79	0.0	0
2024-07-30	84	67	75.5	6.4	0	11	0.00	0.0	0
2024-07-31	84	67	75.5	6.5	0	11	0.00	0.0	0
<b>Sum</b>	2499	1828	-	-	9	166	1.99	0.0	-
<b>Average</b>	80.6	59.0	69.8	0.6	-	-	-	-	0.0
<b>Normal</b>	80.3	58.1	69.2	-	21	151	4.10	M	-

<b>Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).</b>
Max Temperature : 7am
Min Temperature : 7am
Precipitation : 7am
Snowfall : unknown
Snow Depth : 7am

**Climatological Data for RICE, MN - August 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-08-01	86	64	75.0	6.1	0	10	0.74	0.0	0
2024-08-02	79	61	70.0	1.2	0	5	0.17	0.0	0
2024-08-03	87	56	71.5	2.8	0	7	0.00	0.0	0
2024-08-04	85	57	71.0	2.4	0	6	0.76	0.0	0
2024-08-05	78	61	69.5	1.0	0	5	0.00	0.0	0
2024-08-06	61	51	56.0	-12.4	9	0	2.00	0.0	0
2024-08-07	75	53	64.0	-4.3	1	0	0.00	0.0	0
2024-08-08	70	54	62.0	-6.1	3	0	0.39	0.0	0
2024-08-09	64	52	58.0	-10.0	7	0	0.00	0.0	0
2024-08-10	67	49	58.0	-9.9	7	0	0.00	0.0	0
2024-08-11	71	46	58.5	-9.2	6	0	0.00	0.0	0
2024-08-12	77	47	62.0	-5.6	3	0	0.00	0.0	0
2024-08-13	79	50	64.5	-2.9	0	0	0.00	0.0	0
2024-08-14	80	52	66.0	-1.3	0	1	0.00	0.0	0
2024-08-15	78	62	70.0	2.9	0	5	0.69	0.0	0
2024-08-16	78	64	71.0	4.1	0	6	0.00	0.0	0
2024-08-17	74	65	69.5	2.7	0	5	0.05	0.0	0
2024-08-18	78	59	68.5	1.9	0	4	0.00	0.0	0
2024-08-19	79	59	69.0	2.6	0	4	0.00	0.0	0
2024-08-20	79	59	69.0	2.8	0	4	0.00	0.0	0
2024-08-21	75	59	67.0	0.9	0	2	0.00	0.0	0
2024-08-22	78	59	68.5	2.6	0	4	0.00	0.0	0
2024-08-23	71	60	65.5	-0.2	0	1	0.66	0.0	0
2024-08-24	75	64	69.5	4.0	0	5	0.00	0.0	0
2024-08-25	84	63	73.5	8.3	0	9	0.00	0.0	0
2024-08-26	84	71	77.5	12.5	0	13	0.00	0.0	0
2024-08-27	87	64	75.5	10.7	0	11	0.75	0.0	0
2024-08-28	77	58	67.5	2.9	0	3	0.01	0.0	0
2024-08-29	77	58	67.5	3.2	0	3	0.00	0.0	0
2024-08-30	82	54	68.0	3.9	0	3	0.84	0.0	0
2024-08-31	78	54	66.0	2.1	0	1	0.00	0.0	0
<b>Sum</b>	2393	1785	-	-	36	117	7.06	0.0	-
<b>Average</b>	77.2	57.6	67.4	0.6	-	-	-	-	0.0
<b>Normal</b>	78.4	55.1	66.8	-	46	101	3.94	M	-

<b>Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).</b>
Max Temperature : 7am
Min Temperature : 7am
Precipitation : 7am
Snowfall : unknown
Snow Depth : 7am

**Climatological Data for RICE, MN - September 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-09-01	84	51	67.5	3.9	0	3	0.00	0.0	0
2024-09-02	70	45	57.5	-5.9	7	0	0.00	0.0	0
2024-09-03	74	46	60.0	-3.1	5	0	0.00	0.0	0
2024-09-04	77	57	67.0	4.2	0	2	0.00	0.0	0
2024-09-05	81	57	69.0	6.5	0	4	0.04	0.0	0
2024-09-06	71	46	58.5	-3.7	6	0	0.00	0.0	0
2024-09-07	67	45	56.0	-6.0	9	0	0.05	0.0	0
2024-09-08	70	47	58.5	-3.2	6	0	0.00	0.0	0
2024-09-09	78	51	64.5	3.1	0	0	0.00	0.0	0
2024-09-10	81	51	66.0	5.0	0	1	0.00	0.0	0
2024-09-11	76	55	65.5	4.8	0	1	0.00	0.0	0
2024-09-12	82	55	68.5	8.1	0	4	0.00	0.0	0
2024-09-13	84	59	71.5	11.5	0	7	0.00	0.0	0
2024-09-14	84	58	71.0	11.3	0	6	0.00	0.0	0
2024-09-15	78	61	69.5	10.1	0	5	0.00	0.0	0
2024-09-16	85	65	75.0	16.0	0	10	0.00	0.0	0
2024-09-17	86	66	76.0	17.4	0	11	0.00	0.0	0
2024-09-18	86	67	76.5	18.2	0	12	T	0.0	0
2024-09-19	77	69	73.0	15.1	0	8	0.19	0.0	0
2024-09-20	82	57	69.5	12.0	0	5	0.00	0.0	0
2024-09-21	78	56	67.0	9.9	0	2	0.14	0.0	0
2024-09-22	80	44	62.0	5.3	3	0	0.00	0.0	0
2024-09-23	66	40	53.0	-3.3	12	0	0.00	0.0	0
2024-09-24	69	40	54.5	-1.4	10	0	0.00	0.0	0
2024-09-25	71	45	58.0	2.6	7	0	0.00	0.0	0
2024-09-26	79	45	62.0	7.0	3	0	0.00	0.0	0
2024-09-27	82	49	65.5	10.9	0	1	0.00	0.0	0
2024-09-28	82	49	65.5	11.4	0	1	0.00	0.0	0
2024-09-29	83	46	64.5	10.8	0	0	0.00	0.0	0
2024-09-30	79	46	62.5	9.3	2	0	0.00	0.0	0
<b>Sum</b>	2342	1568	-	-	70	83	0.42	0.0	-
<b>Average</b>	78.1	52.3	65.2	6.3	-	-	-	-	0.0
<b>Normal</b>	70.8	47.0	58.9	-	219	36	3.07	M	-

<b>Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).</b>
Max Temperature : 7am
Min Temperature : 7am
Precipitation : 7am
Snowfall : unknown
Snow Depth : 7am



## **Appendix B**

### **Little Falls Project Desktop Fish Entrainment and Impingement Study Report**

# DESKTOP FISH ENTRAINMENT AND IMPINGEMENT STUDY REPORT

LITTLE FALLS HYDROELECTRIC PROJECT  
FERC No. 2532

Prepared for:

**Minnesota Power**

Prepared by:

**Kleinschmidt Associates**

January 2025

***Kleinschmidt***

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## 1.0 INTRODUCTION

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ALLETE, Inc, doing business as Minnesota Power (MP), is the Licensee, owner, and operator of the Little Falls Hydroelectric Project (FERC No. 2532) (Little Falls Project). The Little Falls Project is a 4.72-megawatt (MW) run-of-river facility located on the Mississippi River in Morrison County, Minnesota. The Federal Energy Regulatory Commission (FERC) license for the Little Falls Project expires on March 31, 2028. MP is using the Integrated Licensing Process (ILP) to relicense the Little Falls Project.

During study scoping, FERC requested a study to assess the potential for fish entrainment and impingement at the Little Falls Project, and the potential effects of entrainment and impingement on local fish communities. MP filed a Proposed Study Plan (PSP) on September 8, 2023, and held a study plan meeting on October 11, 2023. MP subsequently filed a Revised Study Plan (RSP) on January 9, 2024.

This study has been conducted to provide an order-of-magnitude estimate of fish entrainment and impingement at the Little Falls Project. Specifically, the goal of this study was to use a desktop analysis to evaluate the potential for fish entrainment and impingement at the powerhouse, estimate fish mortality due to entrainment and impingement, and assess the effect that entrainment and impingement may have on the local fish community. This qualitative risk assessment is commonly used to estimate order-of-magnitude levels of entrainment and impingement as part of the FERC licensing and relicensing processes.

The specific objectives of this Desktop Entrainment and Impingement Study are:

- Describe the physical characteristics of the Little Falls Project and document factors that could affect impingement, entrainment, and survival as they relate to project specific parameters;
- Determine target fish species or family groups, and describe factors that influence their vulnerability to impingement, entrainment, and turbine survival;
- Estimate fish impingement, entrainment, and associated mortality rates; and
- Describe potential effects to local fish communities associated with entrainment and impingement.

## **1.1 Little Falls Project Description**

The Little Falls dam forms a 575-acre reservoir on the Mississippi River. The Little Falls Project has two powerhouses. Powerhouse 1 has two horizontal Francis turbines, each with an installed capacity of 400 kilowatts (kW). Powerhouse 2 has two vertical Francis turbines, each with an installed capacity of 800 kW, one vertical Francis turbine with an installed capacity of 1,120 kW, and one vertical propeller turbine with an installed capacity of 1,200 kW. The maximum hydraulic capacity of Powerhouse 1 is 820 cubic feet per second (cfs), and the maximum capacity of Powerhouse 2 is 2,960 cfs (Table 1-1). The Little Falls Project is operated in run-of-river mode, with outflows at the dam approximating inflow. Normal pool is maintained by discharging flow through the turbines. Flows in excess of turbine capacity are passed via spill.

**Table 1-1. Little Falls Project Specifications**

Little Falls Project Description	Specification
<b>General Information</b>	
Licensed Capacity	4,720 kW
Operation Type	Run-of-river
Normal Effective Head	23 feet
<b>Powerhouse 1</b>	
Total Intake Width	28 feet
Intake Height	15 feet
Trashrack Bar Thickness	0.25 inch
Trashrack Spacing	2.0 inch clear spacing, 2.25 inch centerline spacing
<b>Turbine Generators 5 and 6</b>	
Two Horizontal Francis Turbines	
Installed Capacity of Each Unit	400 kW
Revolutions Per Minute of Each Unit	225
Maximum Hydraulic Capacity of Each Unit	410 cfs
Minimum Hydraulic Capacity of Each Unit	95 cfs
<b>Powerhouse 2</b>	
Total Intake Width	15 feet
Intake Height	92 feet
Trashrack Bar Thickness	0.25 inch
Trashrack Bar Spacing	2.0 inch clear spacing, 2.25 inch centerline spacing
<i>Turbine Generators</i>	
<b>Turbine Generator 1</b>	
Vertical Francis Turbine	
Installed Capacity	800 kW
Revolutions Per Minute	120
Maximum Hydraulic Capacity	665 cfs
Minimum Hydraulic Capacity	175 cfs
<b>Turbine Generator 2</b>	
Vertical Francis Turbine	
Installed Capacity	800 kW
Revolutions Per Minute	120

Little Falls Project Description	Specification
Maximum Hydraulic Capacity	620 cfs
Minimum Hydraulic Capacity	155 cfs
<b>Turbine Generator 3</b>	Vertical Francis Turbine
Installed Capacity	1,120 kW
Revolutions Per Minute	120
Maximum Hydraulic Capacity	765 cfs
Minimum Hydraulic Capacity	235 cfs
<b>Turbine Generator 4</b>	Vertical Propeller Turbine
Installed Capacity	1,200 kW
Revolutions Per Minute	150
Maximum Hydraulic Capacity	910 cfs
Minimum Hydraulic Capacity	450 cfs

## 2.0 METHODS

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Fish impingement and entrainment may occur when fish enter into the intake area during periods of operation and become either impinged on the trashracks (dependent on bar rack spacing and fish size) or become entrained through the trashracks and turbines. As fish pass through a turbine, they can be subjected to pressure changes, shear stress, and mechanical injury. Each of these stresses can influence the survivability of fish passing through a turbine. Fish entrainment (rate and mortality) was historically evaluated through empirical onsite investigation. In this analysis, the results of prior entrainment and turbine mortality field studies were used to approximate the potential impacts to fish entrained at the Little Falls Project.

The primary inputs for this desktop analysis were developed through a series of evaluations covering the following steps:

1. Develop a fish entrainment and turbine mortality database that can be applied to the Little Falls Project.
2. Estimate fish entrainment rates, defined as number of fish/volume of water entrained.
3. Characterize the species composition of potential fish entrainment.
4. Apply physical or biological filters that may influence entrainment.
5. Estimate impingement mortality for fish excluded from entrainment estimates.
6. Estimate the total annual entrainment for the Little Falls Project based on a range of low, normal, and high river flow years.
7. Estimate potential turbine mortality for fish entrainment.

### 2.1 Entrainment Database and Entrainment Rates

Over sixty site-specific studies of resident fish entrainment at hydroelectric projects in the United States have been reported to date, which provide order-of-magnitude estimates of annual fish entrainment (EPRI 1997, FERC 1995). Descriptive information was gathered from available entrainment studies, which include:

- Location: geographic proximity to the Little Falls Project
- Project size: discharge capacity and power production
- Mode of operation: e.g., run-of-river, etc.
- Biological factors: similarity of fish species composition

Using these criteria, a list of surrogate studies was developed. To ensure a robust dataset, nine source studies were included in the development of a project specific entrainment rate. The reported annual entrainment rates for each of the sites were averaged to provide an annual entrainment rate for the Little Falls Project. Annual entrainment rates were used due to differences in how monthly entrainment rates were calculated in surrogate studies. The annual entrainment rates for projects in Electric Power Research Institute (EPRI) entrainment study databases were reported in fish per hour using 100% of the plant capacity. These hourly entrainment rates were converted to fish per water volume discharged (million cubic feet [MCF]). Entrainment rates expressed as fish per volume of water allow for the comparison of entrainment at different sites despite varying characteristics, such as plant hydraulic capacity. Once an annual entrainment rate was established for each site, the rates were averaged to produce an estimated annual entrainment rate for the Little Falls Project.

## **2.2 Estimation of Total Annual Entrainment**

Annual entrainment estimates were developed for the Little Falls Project by multiplying the annual entrainment rate by the estimated monthly generation flows. Due to differences in the methods used to calculate monthly entrainment rates for sites within the EPRI databases, annual entrainment (fish per MCF) was applied across all months. Monthly generation flow estimates (1993-2023) were derived using mean monthly values from USGS Gage No. 05267000, located on the Mississippi River near Royalton, MN, which is approximately 12 river miles downstream of the Little Falls Project with a drainage area of 11,600 square miles. The prorated factor was determined from the ratio of the drainage area at Little Falls dam to the drainage area at USGS Gage No. 05267000 ( $= 11,145 \text{ square miles} / 11,600 \text{ square miles} = 0.961$ ). Mean daily flows were also adjusted to account for the limitations of powerhouse hydraulic capacity. Flows were limited to the maximum total powerhouse flow of 3,780 cfs. Flows in excess of this would pass as spill and were not included in the calculation of generation flows. After calculating the average daily powerhouse flows, monthly flow estimates were calculated by multiplying the average daily powerhouse flows by the number of days in the month. The average monthly flow in cfs was then converted to the volume of water expected to pass through the powerhouses in MCF. The monthly MCF values were summed to calculate the annual volume of water that is expected to be passed through the Little Falls Project powerhouses. This approach is conservative and assumes that the project operates at

maximum capacity with no turbine outages during the year, which is an operationally unlikely scenario.

Additionally, potential maximum and minimum entrainment estimates were calculated using the monthly minimum and maximum daily average flows that occurred during 1993-2023.

## 2.3 Species Composition

Site-specific data from the Minnesota Department of Natural Resources (Minnesota DNR) trap netting assessments were used to characterize the expected fish assemblage at the Little Falls Project. Fisheries data collected via trap netting in 2009 were compiled to assess species composition for the reach of the Mississippi River upstream of the Little Falls Project. Trap nets with multiple mesh sizes were set to sample fish species in the Little Falls Project reservoir. A total of eighteen fish species were documented during the 2009 survey (Minnesota DNR 2009). Rock bass were the most abundant fish species, comprising 39% of the total catch (Table 2-1).

**Table 2-1. Fish Species Collected During Minnesota DNR Trap Netting Surveys**

Species	Total	Relative Abundance (%)
Black bullhead	6	4%
Black crappie	10	6%
Bluegill	7	4%
Bluntnose minnow	6	4%
Brook silverside	4	2%
Brown bullhead	5	3%
Common carp	1	1%
Common shiner	8	5%
Hornyhead chub	10	6%
Largemouth bass	1	1%
Northern pike	1	1%
Rock bass	63	39%
Silver redhorse	2	1%
Smallmouth bass	3	2%
Spotfin shiner	29	18%
White sucker	4	2%
Yellow bullhead	1	1%
Yellow perch	1	1%
<b>Total</b>	<b>162</b>	<b>100%</b>

Source: Minnesota DNR 2009

## 2.4 Entrainment Screening

Physical and biological filters refer to the physical layout of the project intakes, or biological factors that would influence entrainment. Examples of this include trash rack spacing that prevents fish from entering the intakes, or intake velocities that are lower than fish sustained swim speeds.

The first potential entrainment filter analyzed was the expected approach and through rack velocity of water at the Little Falls Project intakes. This entrainment filter was calculated using Little Falls Project specific characteristics for each of the two powerhouses, including trash rack spacing, intake area, and maximum flow capacity of the Little Falls Project’s turbines (Table 2-2). Calculated water velocity was compared to the swimming speeds of potentially entrained fish. Fish swimming speeds were estimated using methods put forth in a United States Fish and Wildlife Service (USFWS) bulletin (USFWS 1989). The bulletin defines a conservative estimate of a fish’s sustained swimming speed as three times its body length. The expected swimming speed of fish at the Little Falls Project was calculated using the following equation:

$$\text{Sustained swimming speed (ft/s)} = \text{fish length (ft)} \times 3 \text{ body lengths per second (ft/s)}$$

This information was used to exclude fish that can escape intake flows from the entrainment estimate and provides a more conservative estimate of potential entrainment than use of the faster burst swim speeds. Inclusion of smaller size classes of fish with slower swim speeds mirrors results of empirical in-field studies, where juveniles and smaller adult fish comprise much of the documented entrainment composition, with relatively few larger adults present (EPRI 1997, FERC 1995).

**Table 2-2. Little Falls Project Intake and Trashrack Dimensions**

<b>Powerhouse 1</b>	
Intake Height (ft)	16
Intake Width (ft)	28
Intake Area (ft <sup>2</sup> )	420
Trash Rack Clear Bar Spacing (in)	2.0
Track Rack Centerline Bar Spacing (in)	2.25
Trash Rack Bar Thickness (in)	0.25
Bar Percentage	11
Bar Area (ft <sup>2</sup> )	46.7
Free Area (ft <sup>2</sup> )	373.3
<b>Approach Velocity (fps)</b>	<b>1.83</b>
<b>Through Rack Velocity (fps)</b>	<b>2.06</b>

<b>Powerhouse 2</b>	
Intake Height (ft)	16
Intake Width (ft)	92
Intake Area (ft <sup>2</sup> )	1,472
Trash Rack Clear Bar Spacing (in)	2.0
Track Rack Centerline Bar Spacing (in)	2.25
Trash Rack Bar Thickness (in)	0.25
Bar Percentage	11
Bar Area (ft <sup>2</sup> )	163.6
Free Area (ft <sup>2</sup> )	1,308.4
<b>Approach Velocity (fps)</b>	<b>2.01</b>
<b>Through Rack Velocity (fps)</b>	<b>2.26</b>

## 2.5 Fish Impingement

Impingement can occur if a fish is too wide to travel through the trash racks and cannot escape intake inflow. Widths of fish potentially entrained at the Little Project were estimated using interorbital width. Interorbital width is the distance between eyes as measured across the head and is roughly equivalent to skull width. The skull is the least compressible part of the fish body and provides a conservative index of what size fish the trashrack may exclude. Interorbital widths were calculated using the relationships of a fish's total length, standard length, and interorbital width as defined in Smith (1985).

## 2.6 Turbine Mortality Rates and Estimation of Fish Mortality

Mortality estimates were calculated using methods defined in Franke et al. (1997). Franke et al. developed equations for calculating the probability that a turbine blade would strike an entrained fish based on Project specific turbine parameters. Table 2-3 describes the specific parameters for the Little Falls Project, assuming the plant is operating at maximum hydraulic capacity. The project has both Francis and propeller turbines. The equation used to calculate the blade strike probability for a Francis unit is:

$$P = \lambda \frac{N \cdot L}{D} \cdot \left[ \frac{\sin \alpha_t \cdot \frac{B}{D_1}}{2Q_{ad}} + \frac{\cos \alpha_t}{\pi} \right]$$

Where:

- $P$  = Probability of strike
- $\lambda$  = Blade strike correlation factor
- $N$  = Number of buckets
- $L$  = Fish length
- $D$  = Diameter of runner
- $B$  = Runner height at inlet
- $D_1$  = Diameter of runner at inlet
- $Q\omega^d$  = Discharge coefficient =  $(Q / \omega D^3)$ , where  $Q$  = max flow and  $\omega$  = rotational speed
- $\alpha^t$  = Angle to tangential of absolute flow upstream of runner

$$\text{Survival (S)} = 1 - P$$

The equation used to calculate the blade strike probability for a propeller unit is:

$$P = \lambda \frac{N \cdot L}{D} \left[ \frac{\cos \alpha_a}{8Q_{out}} + \frac{\sin \alpha_a}{\pi \frac{r}{R}} \right]$$

Where:

- $P$  = Probability of strike
- $\lambda$  = Blade strike correlation factor
- $N$  = Number of buckets
- $L$  = Fish length
- $D$  = Diameter of runner
- $Q\omega^d$  = Discharge coefficient =  $(Q / \omega D^3)$ , where  $Q$  = max flow and  $\omega$  = rotational speed
- $\alpha_a$  = Angle to axial of absolute flow upstream of runner

$$\text{Survival (S)} = 1 - P$$

Mortality rates for each length class were calculated using the longest fish in a length class. For example, all fish within the 0–5-inch length class were assigned the mortality rate calculated for a 5-inch fish. After calculating the mortality rate with the Little Falls Project’s Francis and propeller turbines for each length class, mortality rates were applied to the estimated number of fish entrained annually for each length class. This provided a conservative estimate of annual entrainment mortality.

A correlation factor was utilized to adjust the predictive model results to correspond with documented empirical data. The correlation factor was originally introduced by Von Raben (Bell 1981) to account for the fact that the contact of a fish with a turbine component does not always result in injury or mortality (Bell 1981, Cada 1998). Therefore, Von Raben introduced the correlation factor to adjust the predicted turbine strike results to more closely match empirical results. The correlation factor is necessary because not all strikes lead to death, and not all mortality is due to blade strike. This factor also extends the applicability of these predictive equations to all injury mechanisms related to the variable parameters. Franke et al. (1997) refined the Von Raben model to consider the effect of tangential projection of the fish length on blade strike probability, as a large percentage of entrainment mortality is caused by fish strikes from a turbine blade or some other turbine component. As stated in Franke et al. (1997) *“such mechanisms could include mechanical mechanisms such as leading-edge strike and gap grinding as well as fluid induced mechanisms related to flow through gaps or other flow phenomena associated with blades.”* Based on a substantial number of test results obtained from studies conducted with salmonids on the west coast, Franke et al. (1997) recommends a correlation factor ranging from 0.1 to 0.2. Use of a higher correlation factor results in a lower survival rate. For this assessment, blade strike analyses were run with correlation factors of 0.10, 0.15, and 0.20.

**Table 2-3. Little Falls Project Turbine Specifications**

Turbine Characteristics	Specification
<b><i>Powerhouse 2</i></b>	
<b>Unit 1</b>	Vertical Francis
RPM:	120
Maximum Hydraulic Capacity (cfs):	665
<b>Unit 2</b>	Vertical Francis
RPM:	120
Maximum Hydraulic Capacity (cfs):	620
<b>Unit 3</b>	Vertical Francis
RPM:	120
Maximum Hydraulic Capacity (cfs):	765
<b>Unit 4</b>	Vertical Propellor
RPM:	150
Maximum Hydraulic Capacity (cfs):	910
<b><i>Powerhouse 1</i></b>	
<b>Unit 5</b>	Horizontal Francis
RPM:	150
Maximum Hydraulic Capacity (cfs):	410
<b>Unit 6</b>	Horizontal Francis
RPM:	150
Maximum Hydraulic Capacity (cfs):	410

## 3.0 RESULTS

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### 3.1 Entrainment Database and Entrainment Rates

Using the methods described in Section 2.1, the database of entrainment studies was narrowed to nine sites that are comparable (surrogate) to the Little Falls Project. Database sites included in this analysis have similar project characteristics, are located at latitudes similar to the Little Falls Project, and/or have similar fish species compositions. The reference sites were located in Michigan and West Virginia. Reference sites included in the database were characterized by the presence of warm water and cool water (transitional) species. Numerous species or family groups that were documented by Minnesota DNR trap netting surveys also comprise a large percentage of the fish assemblages documented at reference sites represented in the database.

The Little Falls Project entrainment rate was estimated by averaging the results of studies at reference sites identified in the database. If multiple entrainment studies were completed at a reference site, the most complete study was used in this analysis. Table 3-1 contains information on the sites that make up the Little Falls Project database and the calculated entrainment rate for the Little Falls Project.

**Table 3-1. Little Falls Project Entrainment Database**

Reference Site	Project Size (MW)	Hydraulic Capacity (cfs)	Head (ft)	Location	Operating Mode	Predominant Fish Species	Ent. Rate (fish/MCF)
Millville	2.8	2,220	12	West Virginia	Run-of-river	bluegill, catfish species	0.44
Hawks Nest	102.0	10,000	56	West Virginia	Run-of-river	black crappie, smallmouth bass	0.15
Mio	5.0	4,950	21	Michigan	Run-of-river	bluegill, smallmouth bass	0.77
Alcona	8.0	8,000	43	Michigan	Peaking	bluegill, white sucker, yellow perch	0.36
Loud	4.0	4,444	24	Michigan	Peaking	bluegill, black crappie, rock bass, walleye	1.16
Cooke	9.0	3,600	17	Michigan	Peaking	black crappie, yellow perch	1.96
Foote	9.0	4,050	25	Michigan	Peaking	smallmouth bass, walleye, white sucker	1.21
Rogers	8.8	2,400	40	Michigan	Run-of-river	bass species, walleye, yellow perch	0.74
Dam No. 4	2.1	1,849	19	West Virginia	Run-of-river	smallmouth bass, bluegill	0.09
<b>Little Falls</b>	4.7	3,780	20	Minnesota	Run-of-river	rock bass	<b>0.77</b>

### 3.2 Entrainment Estimate

Table 3-2 through Table 3-4 provide the calculated annual flows through the Little Falls Project powerhouses for a low water year, an average water year (i.e., average river flows observed during 1993-2023), and a high-water year, and the estimated monthly total entrainment rates for each of these flow conditions. The monthly flows were multiplied by the annual entrainment rate calculated for the Little Falls Project (estimated entrainment rate of 0.77 fish/MCF) to estimate annual entrainment. This calculation estimated annual entrainment at 30,809 fish per year during a low water year, 90,605 fish per year during an average water year, and 91,789 fish per year during a high water year, prior to the application of filters that influence entrainment (Table 3-2 to Table 3-4). Powerhouse monthly flow rates assume continuous operation up to maximum capacity of 3,780 cfs.

**Table 3-2. Little Falls Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - Low Flow**

Month	Monthly River Flow (cfs)	Powerhouse Flow (cfs)	Powerhouse Monthly Flow (MCF)	Estimated Fish Entrained (low)
January	1,297	1,297	3,474	2,675
February	999	999	2,417	1,861
March	1,288	1,288	3,450	2,656
April	2,451	2,451	6,353	4,892
May	2,700	2,700	7,232	5,568
June	1,461	1,461	3,787	2,916
July	752	752	2,014	1,551
August	503	503	1,347	1,037
September	763	763	1,978	1,523
October	1,009	1,009	2,703	2,081
November	1,057	1,057	2,740	2,110
December	940	940	2,518	1,939
<b>Annual</b>				<b>30,809</b>

**Table 3-3. Little Falls Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - Average Flow**

<b>Month</b>	<b>Monthly River Flow (cfs)</b>	<b>Powerhouse Flow (cfs)</b>	<b>Powerhouse Monthly Flow (MCF)</b>	<b>Estimated Fish Entrained (average)</b>
January	3,597	3,597	9,634	7,418
February	3,387	3,387	8,194	6,309
March	5,165	3,780	10,124	7,796
April	10,789	3,780	9,798	7,544
May	10,110	3,780	10,124	7,796
June	7,938	3,780	9,798	7,544
July	6,847	3,780	10,124	7,796
August	4,202	3,780	10,124	7,796
September	3,743	3,743	9,702	7,470
October	5,140	3,780	10,124	7,796
November	5,381	3,780	9,798	7,544
December	4,179	3,780	10,124	7,796
<b>Annual</b>				<b>90,605</b>

**Table 3-4. Little Falls Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - High Flow**

<b>Month</b>	<b>Monthly River Flow (cfs)</b>	<b>Powerhouse Flow (cfs)</b>	<b>Powerhouse Monthly Flow (MCF)</b>	<b>Estimated Fish Entrained (high)</b>
January	7,621	3,780	10,124	7,796
February	12,493	3,780	9,145	7,041
March	23,929	3,780	10,124	7,796
April	36,710	3,780	9,798	7,544
May	25,947	3,780	10,124	7,796
June	24,121	3,780	9,798	7,544
July	20,854	3,780	10,124	7,796
August	11,340	3,780	10,124	7,796
September	12,397	3,780	9,798	7,544
October	18,067	3,780	10,124	7,796
November	15,568	3,780	9,798	7,544
December	12,781	3,780	10,124	7,796
<b>Annual</b>				<b>91,789</b>

### 3.3 Species and Length Class Composition

Species and length class composition were calculated using the results of Minnesota DNR trap netting surveys (Minnesota DNR 2009). Most documented fish were less than 9 inches in length (Table 3-5). Similar species were pooled into family groups, including sucker species (silver redhorse and white sucker), bullhead species (black bullhead and brown bullhead), sunfish species (rock bass and bluegill), and cyprinid species (spotfin shiner, common shiner, and bluntnose minnow) (Table 3-6). Brook silverside were included with cyprinids due to their similar size and body morphology. Species and length composition percentages were applied to the annual entrainment total to estimate entrainment by species and length class.

**Table 3-5. Length Class Composition Percentages**

Length Class (in.)	Black Crappie	Bullhead spp.	Sunfish spp.	Bass Species	Cyprinid spp.	Northern Pike	Sucker spp.	Common Carp	Yellow Perch
0.0-5.0	30%	9%	39%	33%	100%	0%	0%	0%	100%
5.1-9.0	40%	18%	43%	33%	0%	0%	0%	0%	0%
>9.0	30%	73%	18%	33%	0%	100%	100%	100%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Table 3-6. Combined Family Groups**

Species	Total Fish Collected	Relative Abundance (%)
Black crappie	10	6.2%
Bullhead spp.	12	7.4%
Sunfish spp.	70	43.2%
Bass Species	4	2.5%
Cyprinid spp.	57	35.2%
Northern pike	1	0.6%
Sucker spp.	6	3.7%
Common carp	1	0.6%
Yellow perch	1	0.6%
<b>Total</b>	<b>162</b>	<b>100%</b>

Source: Minnesota DNR 2009

### 3.4 Entrainment Filters

The maximum calculated approach velocity (2.0 feet per second [fps]) and through velocity (2.3 fps) at the maximum hydraulic capacity were compared to the calculated swim speed of fish for each length class. Fish swim speeds were calculated using an assumed minimum sustained swim speed of three body lengths per second (Table 3-7) (USFWS 1989). Sustained swim speed calculations show that fish greater than 9 inches would likely be able to escape flow at the Little Falls Project intakes and avoid entrainment; therefore, fish larger than 9 inches, including all carp, sucker species, and northern pike,

were excluded from the entrainment estimate. Entrainment totals after screening fish larger than 9 inches for low, average, and high flow scenarios are included in Table 3-8 to Table 3-10. Filtered annual entrainment rates range from 24,685 fish per year in the low flow scenario to 73,545 fish per year in the high flow scenario.

**Table 3-7. Fish Swimming Speed by Length**

<b>Fish Length (in.)</b>	<b>Sustained Swim Speed (ft/s)</b>
1.0	0.3
2.0	0.5
3.0	0.8
4.0	1.0
5.0	1.3
6.0	1.5
7.0	1.8
8.0	2.0
9.0	2.3
10.0	2.5
11.0	2.8
12.0	3.0
13.0	3.3
14.0	3.5

**Table 3-8. Filtered Annual Entrainment Results by Species - Low Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	1,340
Bullhead spp.	574
Sunfish spp.	12,438
Smallmouth bass	383
Cyprinid spp.	9,759
Yellow perch	191
<b>Total</b>	<b>24,685</b>

**Table 3-9. Filtered Annual Entrainment Results by Species - Average Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	3,939
Bullhead spp.	1,688
Sunfish spp.	36,580
Smallmouth bass	1,126
Cyprinid spp.	28,701
Yellow perch	563
<b>Total</b>	<b>72,597</b>

**Table 3-10. Filtered Annual Entrainment Results by Species - High Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	3,991
Bullhead spp.	1,710
Sunfish spp.	37,058
Smallmouth bass	1,140
Cyprinid spp.	29,076
Yellow perch	570
<b>Total</b>	<b>73,545</b>

### 3.5 Fish Impingement

A majority of species and size classes at the project would be capable of fitting through the Little Falls Project's 2-inch trashrack spacing (Table 3-11). Adult carp or other fish excluded by the 2-inch spacing would be expected to have sustained swim speeds well above the 2.0 fps approach velocity and 2.3 fps through velocity and would therefore not be susceptible to impingement. Fish with sustained swim speeds at or below the through velocity of 2.3 fps have interorbital widths well below the 2-inch trashrack spacing and would not be susceptible to impingement on the trashracks at either powerhouse.

**Table 3-11. Calculated Interorbital Widths for Fish Species Collected at the Little Falls Project**

<b>Species</b>	<b>Total Length of Largest Individual from Dataset (in.)</b>	<b>Interorbital Width of Largest Individual from Dataset (in.)*</b>
Sunfish spp.**	10.1	0.8
Bass spp.***	14.6	0.9
Common carp	27	3.0
Black crappie	12.6	0.7
Bullhead spp.****	15.2	1.9
Northern pike	19.6	1.1
Yellow perch	10.2	0.6

\*Interorbital widths calculated from proportional measurements listed in Smith (1985)

\*\*Rock bass used as surrogate for bluegill

\*\*\*Largemouth bass used as surrogate for smallmouth bass

\*\*\*\*Brown bullhead used as surrogate for black bullhead

### 3.6 Mortality Estimate

Mortality rates were applied to the dataset after screening fish capable of escaping powerhouse inflow. Mortality rates (%) were estimated for fish entrained through one of the two vertical Francis units in Powerhouse 1 (Unit 5, which represents the highest calculated blade strike mortality rate) and the propellor unit in Powerhouse 2 (Unit 4, which represents the lowest calculated blade strike mortality rate). These mortality rates were then applied to the total fish entrainment estimate for each of the three flow scenarios to derive a high and low entrainment mortality estimate for the entire Little Falls

Project using the highest and lowest potential turbine mortality rates. Mortality rates calculated for 5-inch fish were applied to all fish in the 0–5-inch length class with correlation factors of 0.10, 0.15, and 0.20 (Table 3-12). The mortality rates calculated for 9-inch fish were applied to all fish in the 5.1-9.0-inch length class. Total annual entrainment mortality for the Little Falls Project in the low flow scenario ranged from 1,149 fish to 4,858 fish across unit types and correlation factors (Table 3-13 and Table 3-14). Total annual entrainment mortality for the Little Falls Project in the average flow scenario ranged from 3,378 fish to 14,292 fish (Table 3-15 and Table 3-16). Total annual entrainment mortality for the Little Falls Project in the high flow scenario ranged from 3,442 fish to 14,477 fish (Table 3-17 and Table 3-18).

**Table 3-12. Entrainment Mortality Rates**

<b>Francis Unit 5</b>			
<b>Length Class</b>	<b>Correlation Factor</b>		
	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>
0-5-inch	7.9%	11.8%	15.8%
5.1-9.0-inch	14.2%	21.3%	28.4%
<b>Propeller Unit 4</b>			
<b>Length Class</b>	<b>Correlation Factor</b>		
	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>
0-5-inch	3.7%	5.6%	7.5%
5.1-9.0-inch	6.7%	10.1%	13.4%

**Table 3-13. Total Annual Entrainment Mortality - Low Flow – (Based on Unit 5 Mortality Rate Applied to Total Entrainment)**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	154	231	308
Bullhead spp.	70	104	139
Sunfish spp.	1,393	2,090	2,786
Bass spp.	42	63	54
Cyprinid spp.	771	1,156	1,541
Northern pike	0	0	0
Sucker spp.	0	0	0
Carp	0	0	0
Yellow perch	15	23	30
<b>Total</b>	<b>2,445</b>	<b>3,667</b>	<b>4,858</b>

**Table 3-14. Total Annual Entrainment Mortality - Low Flow – (Based on Unit 4 Mortality Rate Applied to Total Entrainment)**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	73	109	146
Bullhead spp.	33	49	66
Sunfish spp.	655	989	1,317
Bass spp.	20	30	26
Cyprinid spp.	361	547	732
Northern pike	0	0	0
Sucker spp.	0	0	0
Carp	0	0	0
Yellow perch	7	11	14
<b>Total</b>	<b>1,149</b>	<b>1,735</b>	<b>2,301</b>

**Table 3-15. Total Annual Entrainment Mortality - Average Flow – (Based on Unit 5 Mortality Rate Applied to Total Entrainment)**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	453	680	907
Bullhead spp.	204	307	409
Sunfish spp.	4,097	6,146	8,194
Bass spp.	124	187	160
Cyprinid spp.	2,266	3,400	4,533
Northern pike	0	0	0
Sucker spp.	0	0	0
Carp	0	0	0
Yellow perch	44	67	89
<b>Total</b>	<b>7,188</b>	<b>10,787</b>	<b>14,292</b>

**Table 3-16. Total Annual Entrainment Mortality - Average Flow – (Based on Unit 4 Mortality Rate Applied to Total Entrainment)**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	213	322	428
Bullhead spp.	96	145	193
Sunfish spp.	1,927	2,910	3,872
Bass spp.	59	88	75
Cyprinid spp.	1,062	1,607	2,153
Northern pike	0	0	0
Sucker spp.	0	0	0
Carp	0	0	0
Yellow perch	21	32	42
<b>Total</b>	<b>3,378</b>	<b>5,104</b>	<b>6,763</b>

**Table 3-17. Total Annual Entrainment Mortality - High Flow – (Based on Unit 5 Mortality Rate Applied to Total Entrainment)**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	459	689	918
Bullhead spp.	207	311	414
Sunfish spp.	4,151	6,226	8,301
Bass spp.	126	189	162
Cyprinid spp.	2,296	3,444	4,592
Northern pike	0	0	0
Sucker spp.	0	0	0
Carp	0	0	0
Yellow perch	45	68	90
<b>Total</b>	<b>7,284</b>	<b>10,927</b>	<b>14,477</b>

**Table 3-18. Total Annual Entrainment Mortality – High Flow – (Based on Unit 4 Mortality Rate Applied to Total Entrainment)**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	216	326	434
Bullhead spp.	97	147	196
Sunfish spp.	1,953	2,947	3,923
Bass spp.	59	90	76
Cyprinid spp.	1,076	1,628	2,181
Northern pike	0	0	0
Sucker spp.	0	0	0
Carp	0	0	0
Yellow perch	21	32	43
<b>Total</b>	<b>3,422</b>	<b>5,170</b>	<b>6,853</b>

## 4.0 DISCUSSION

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A comparison of fish swim speeds and body sizes to project intake velocities and trash rack spacing indicates low potential for impingement, as intake velocities are lower than swimming speeds for fish species and size classes that are large enough to be impinged. It is likely that fish entering the project intake would either avoid intake flows or be entrained through the trashracks. Therefore, impingement is unlikely to be a project impact.

The estimates of annual entrainment and turbine mortality presented in this report were developed based on available data and are intended to provide an order-of-magnitude assessment of potential fish entrainment and turbine mortality at the Little Falls Project. The calculations used several conservative assumptions. The method used to determine powerhouse operations was based on ideal conditions and assumes that the Little Falls Project is always available to operate at maximum capacity based on water availability. It does not account for planned or unplanned outages when the hydraulic capacity of the facility is reduced. Reduced hydraulic capacity would reduce the entrainment rate and subsequently the entrainment mortality estimates. Additionally, the survival estimate is influenced by using the turbine mortality rate estimates for the largest fish in the entrained size classes and applying them to all fish. This results in applying a higher mortality estimate for smaller fish within the group than would be expected.

Sunfish comprise a large percentage of the fish collection data and entrainment estimate. Sunfish species, including bluegill and rock bass, are highly fecund and can produce large numbers of offspring per individual female each season (Jenkins and Burkhead 1993). The smallest individuals of these species (e.g., young-of-year) would likely have relatively high entrainment survival rates. Conversely, the smallest size groups that occur soon after hatching have the highest natural mortality rates (typically 90% or greater) associated with ecological and environmental factors (Jenkins and Burkhead 1993). Natural mortality in the population would be substantially higher than the estimated entrainment mortality of the Little Falls Project. Only a very small proportion of the population is subject to entrainment impacts, and for those that are, the entrainment mortality rate for young-of-year sized bluegill (i.e. 0-2 inches) is expected to be lower than that of larger bodied fish.

Annual filtered entrainment estimates across flow scenarios ranged from approximately 25,000 fish to approximately 74,000 fish. A high percentage of the species composition

for this study includes small centrarchid (sunfish) species. Centrarchids less than six inches in total length were also the most abundant size class and family group documented during empirical entrainment studies at multiple projects in the Midwest (EPRI 1997). Annual mortality estimates across flow scenarios and turbine mortality rates ranged from approximately 1,150 fish killed in the low flow scenario to 14,500 fish killed in the high flow scenario.

Additional passage related impacts are possible through the Little Falls Project spillways during periods of high flows, or when the powerhouse is not fully operational. During a low water year, monthly average flow rates remain below the powerhouse capacity of 3,780 cfs for the duration of all months. In an average water year, flows greater than 3,780 cfs are exceeded more than 50% the time. Heisey et al. (1992) examined survival rates of juvenile salmonids passing over dam spillways in the Columbia and Snake River systems, finding survival rates ranging from 88% to 100%. Survival rates varied based on spill volume, with higher spill volumes associated with higher fish survival. Fish passing via spill is most likely to occur during high flow periods when flows in excess of 3,780 cfs are regularly exceeded, and spillway passage would not be expected to cause notable mortality rates for fish at the Little Falls Project.

## 5.0 REFERENCES

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- Bell, M.C. 1981. Updated Compendium on the Success of Passage of Small Fish through Turbines. Tech. rep., U.S. Army Corps of Engineers.
- Cada, G.F. 1998. Better Science Supports Fish-Friendly Turbine Designs. *Hydro Review* 17(6):52-61.
- Electric Power Research Institute (EPRI). 1997. Turbine Entrainment and Survival Database-Field Tests. Prepared by Alden Research Laboratories, Inc. TR-108630.
- Federal Energy Regulatory Commission (FERC). 1995. Preliminary Assessment of Fish Entrainment at Hydropower Projects. Volumes 1 and 2. Office of Hydropower Licensing, FERC. Washington, DC.
- Franke, G.F., D.R. Webb, and R.K. Fisher. 1997. Development of Environmentally Advanced Hydropower Turbine System Design Concepts. Tech. rep., Lockheed Idaho Technologies, Co.
- Heisey, P.G., D. Mathur and T. Rineer. 1992. A Reliable Tag-Recapture Technique for Estimating Turbine Passage Survival: Application to Young-of-the-Year American Shad (*Alosa sapidissima*). *Canadian Journal of Fisheries and Aquatic Sciences*. 49:1826-1834.
- Jenkins, R.E. and N.M. Burkhead. 1993. *Freshwater Fishes of Virginia*. American Fisheries Society, Bethesda, Maryland.
- Minnesota Department of Natural Resources (Minnesota DNR). 2009. Fisheries and Stream Morphology Assessment of the Mississippi River from the Crow Wing River Confluence to St. Cloud, MN. F-29-R(P).
- Smith, C.L. 1985. *The Inland Fishes of New York State*. New York State Department of Environmental Conservation. Albany, New York. 522 pp.
- United States Fish and Wildlife Service (USFWS). 1989. Water Velocity Standards at Power Plant Intakes: Traditional and Alternative Rationales. Information Bulletin No. 89-61.

## Appendix C

### Phase I Architectural History Survey and Evaluation for the Little Falls Hydroelectric Relicensing Project (*Privileged*)

## Appendix D

### Phase I Archaeological Investigation and Conditions Assessment of Archaeological Sites for the Little Falls Hydroelectric Relicensing Project (*Privileged*)

## **Appendix E**

### **Sylvan Water Quality Study Report**

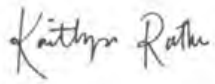


# Sylvan Hydroelectric Project Water Quality Study

Minnesota Power

Project number: 60731187

October 31, 2024



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# 1. Introduction and Background

## 1.1 Introduction

Allete, Inc., doing business as Minnesota Power (“MP” or “Licensee”), is the Licensee of the Sylvan Hydroelectric Project (Sylvan Project) (FERC No. 2454). The Sylvan Project is licensed by the Federal Energy Regulatory Commission (“FERC” or “Commission”) under the authority granted to FERC by Congress through the Federal Power Act (FPA), 16 United States Code (USC) §791(a), et seq., to license and oversee the operation of non-federal hydroelectric projects on jurisdictional waters and/or federal land. There are no federal lands associated with the Sylvan Project. The Sylvan Project FERC license was issued October 29, 1993. The current operating license for the Sylvan Project expires on March 31, 2028. The Licensee is using the Commission’s Integrated Licensing Process (ILP) to relicense the Sylvan Project.

This report describes the methods and results of the approved Water Quality Study (Study) conducted as part of obtaining a new license for the Sylvan Project.

## 1.2 Background

The Sylvan Project operates as a 1.80-megawatt (MW) run-of-river (ROR) facility located on the Crow Wing River in Cass, Crow Wing, and Morrison counties, Minnesota. On March 30, 2023, Minnesota Power initiated the ILP by filing a Pre-Application Document (PAD) and Notice of Intent (NOI) with the Commission. Major ILP milestones to-date are presented in **Table 1-1**.

**Table 1-1. Major ILP milestones to-date.**

Date	Milestone
03/30/2023	PAD and NOI Filed
05/26/2023	Scoping Document 1 (SD1) Issued by FERC
06/21-06/22/2023	FERC Agency and Public Scoping Meetings Conducted
09/08/2023	Scoping Document 2 (SD2) Issued by FERC
09/08/2023	Proposed Study Plan (PSP) Filed
10/11/2023	PSP Meeting Conducted
01/09/2024	Revised Study Plan (RSP) Filed
01/31/2024	FERC Issues Study Plan Determination (SPD)

## 2. Study Goals and Objectives

The goal of the Study is to evaluate dissolved oxygen (DO) and water temperature conditions of both upstream and downstream locations of the Sylvan Project to determine if they meet state water quality standards.

The objectives of the Water Quality Study are:

- a) Document the DO concentration and temperature of water entering the project intake;
- b) Identify the degree and timing of any stratification that may occur;
- c) Identify temporal variation in DO and water temperature;
- d) Identify any instances where DO and water temperature levels do not meet applicable state standards; and
- e) Identify any differences in DO and water temperature in the river downstream of the Sylvan Project.

The Study utilized standard methodologies that are consistent with other water quality monitoring efforts conducted at hydropower projects throughout the region. The specific details and methods included in this Study were outlined in the Revised Study Plan (RSP).

The State of Minnesota has established water quality standards (Minnesota Statute Chapter 7050.0220) to protect water resources for uses such as fishing, swimming, other water recreation activities, and to sustain aquatic life. Such water quality standards are provided below in **Table 2-1**.

**Table 2-1. Water Quality Standards**

Parameter	Numeric Criteria
Dissolved Oxygen (milligram per liter [mg/L])	Daily minimum of 5.0 mg/L
Temperature (degree Fahrenheit [°F])	Temperature must not exceed three degrees Fahrenheit above natural temperature in lakes and five degrees Fahrenheit above natural temperature in streams, based on monthly average of maximum daily temperatures, and shall not exceed a daily average temperature of 86 degrees Fahrenheit. <sup>1</sup>

Source: Minnesota Rules Statute 7050.0220

## 3. Study Area

The Study Area is comprised of the Sylvan Project and is located on the Crow Wing River south of State Highway 210, and east of Pillager, Minnesota. There are three separate monitoring locations at the Sylvan Project (**Figure 3-1**) with their GPS coordinates provided below:

- a) Forebay: 46.304968, -94.377960
- b) Powerhouse Outlet: 46.304823, -94.377653

<sup>1</sup> Temperature must not exceed (approximately) 1.7 degrees Celsius above natural temperature in lakes and 2.8 degrees Celsius above natural temperature in streams, based on monthly average of maximum daily temperatures, and shall not exceed a daily average temperature of 30 degrees Celsius.

c) Downstream of Project: 46.303644, -94.376440

Monitoring Locations are displayed on **Figure 3-1** below:

**Figure 3-1.** Water quality sampling locations at the Sylvan Project site.



These three sampling locations match the locations identified in the FERC approved RSP (2024). The stations include conditions representative of slower pool and flowing channel conditions. The Forebay location is characterized as a pool habitat, while the Powerhouse Outlet corresponds with conditions of a run, and the Downstream of Project location corresponds with riffle conditions.

## 4. Methodology

From June 2024, through September 2024, personnel mobilized to the Site to collect water quality parameters approximately bi-monthly (every other week) at the three locations at the Sylvan Project, outlined above. There were eight (8) total sampling event from June-September 2024. The specific sampling events occurred on the dates listed:

- June 11, 2024
- June 26, 2024
- July 9, 2024
- July 25, 2024
- August 8, 2024
- August 23, 2024
- September 13, 2024
- September 25, 2024

Dissolved oxygen concentration and temperature were measured at multiple depths at each sampling location. At the upstream Forebay location DO and temperature were collected at 1-meter intervals in the water column from the surface to the bottom. At the Powerhouse Outlet location, measurements were taken at the surface, middle, and bottom of the water column. At the Downstream of Project location, total depths were less than 1 meter, therefore DO and temperature measurements were taken from the bottom of the water column and the corresponding depths at each location were recorded. A YSI ProODO equipped with a single probe containing a temperature, DO, and barometer probe, serial number 21A101948, was used for all sampling events. The DO probe was calibrated before each monitoring event. The calibration method used was a percent saturation air calibration method specified in YSI's ProODO User Manual.

Ambient air temperature and current weather conditions at the Sylvan Project were recorded the day measurements were collected. Discharge, stream water level elevation, and gauge height were obtained from the United States Geological Survey (USGS) site 05247500 Crow Wing River near Pillager, MN website. The field sampling sheets and calibration records are provided in this report as **Appendix A**. Site photos from the Study are provided in **Appendix B**. USGS stream gauge data are provided in **Appendix C**.

## 5. Study Results

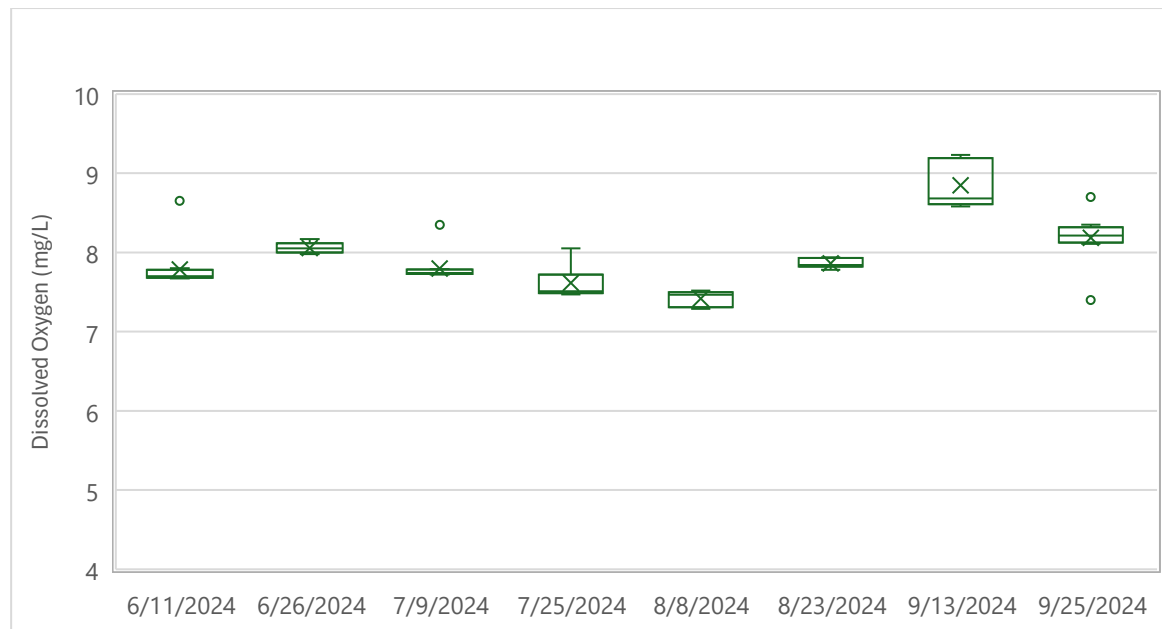
Dissolved oxygen, temperature, river discharge, and water elevation data were collected eight (8) times over the course of the Study. River discharge from the Sylvan Project during the Study period ranged from 776-3890 cubic feet per second (cfs) over the monitoring period. Water elevation of the Crow Wing River during the Study period ranged from 1154.78-1156.63 feet above NAVD 1988. Graphs depicting USGS data from the Study period are included in **Appendix C**. Minnesota Power provided pond and tail level elevation at the Sylvan dam throughout the study period, this data is included in **Appendix D**. The Forebay location was a deeper site, and measurements were collected at 1-meter intervals. The Powerhouse Outlet site was on average 2-3 meters deep, thus measurements were collected at the surface, middle and bottom of the water column. The Downstream of Project area was less than 1 meter deep, and measurements were taken at the bottom of the water column. See **Appendix E** for all data points collected during the Study and used in this report.

Mean DO concentration across the sites ranged from 7.89 to 8.13 milligrams per liter (mg/L) and mean water temperature ranged from 21.25 to 21.43 degrees Celsius (**Table 5-1**). Differences in DO between sites were minimal. The highest mean DO concentration occurred at the Downstream of Project location and the lowest occurred at the Forebay location. Differences in temperature at sites were also minimal, the highest mean water temperature occurring at the Powerhouse Outlet location, and the lowest mean

water temperature at the Downstream of Project location. Median DO concentration at all sites generally increased from June 11, 2024, to September 25, 2024 (**Figure 5-1**). Compared to water quality objectives outlined for the study in **Table 2-1**, DO was above the daily minimum of 5.0 mg/L at all depths, at all locations, on all monitoring dates. Temperature also remained below the standard of 86 degrees Fahrenheit (30 C). Compared to monthly averages of maximum daily temperatures in the area (**Appendix F**), all monitoring dates for each month at all sites were below the maximum daily monthly average for June (75.9 F, 24.4 C), July, (81.4 F, 27.4 C), August (77.9 F, 25.5 C), and September (79.0 F, 26.1 C), respectively. Temperature data was obtained from the National Weather Service at weather.gov for the station in Brainerd, Minnesota located 10.7 miles northeast of Sylvan (United States, 2024).

**Table 5-1.** Mean DO concentration and water temperature at each sampling location for 8 sampling events. Number in parenthesis is one standard error of the mean.

Sampling Location	Dissolved Oxygen (mg/L)	Water Temperature (degrees C)	Number of observations
Forebay	7.89 (0.05)	21.33 (0.19)	55
Powerhouse Outlet	8.01 (0.11)	21.43 (0.30)	24
Downstream of Project	8.13 (0.22)	21.25 (0.60)	8



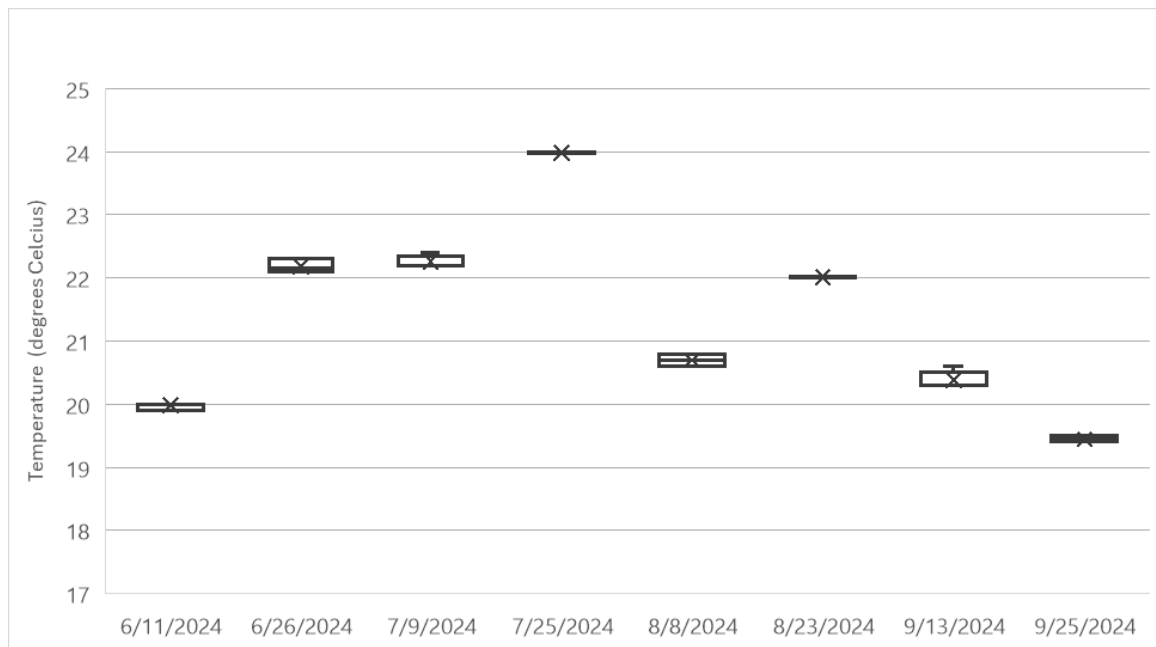
**Figure 5-1.** Boxplot showing DO summary statistics for all sampling locations at the Sylvan Project. The center “X” represents the median, the lower and upper hinges correspond to the first and third quartiles, and outliers are represented by the green dots. Data points were considered outliers if they fell outside 1.5 times the inner quartile range.

## 5.1 Forebay

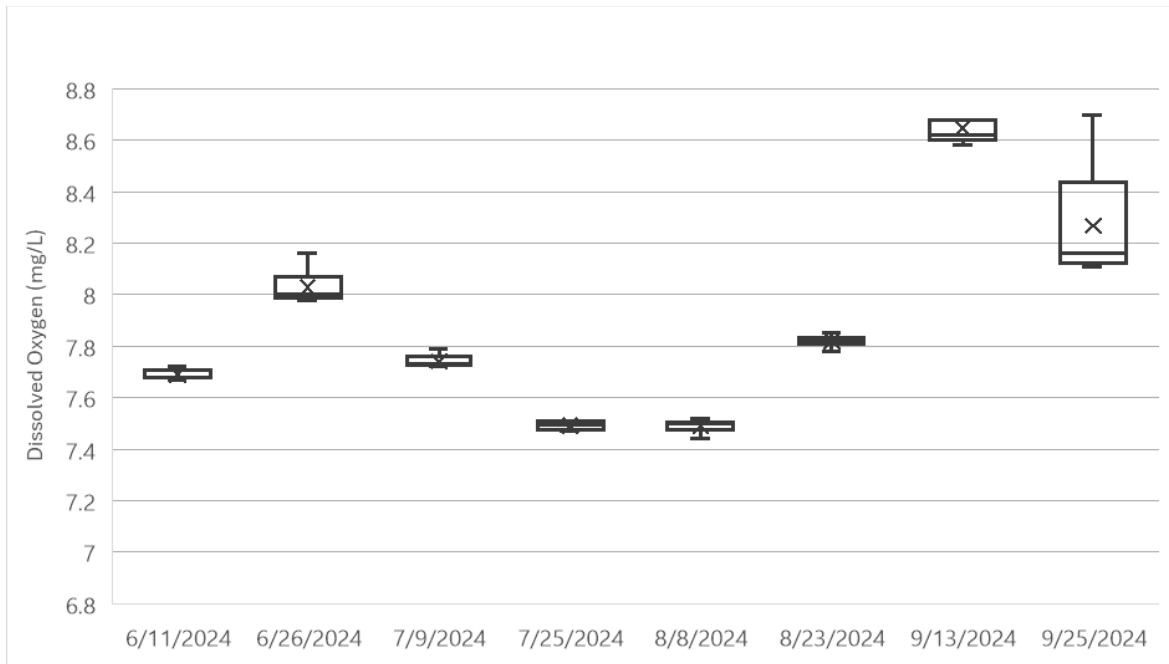
The Forebay site is located upstream of the Sylvan Dam. Temperature and DO measurements were taken up to 7.5 meters below the water surface during the Study. Total depth measurements at the Forebay location varied throughout the duration of the study period from 4.5 to 8 meters. Minnesota Power provided pond level elevations in NGVD29 for the Sylvan Dam. While some depth variation was noted, pond level elevations show only a slight variation at the Forebay from 1776.93 to 1176.93 ft above NGVD29 (**Appendix D**). It is expected that the large variation in measurements can be attributed to difficulties feeling the bottom of the Forebay location. This accounts for the large depth variation noted at the first event, after which field staff purchased a weight to add to more accurately locate the water bottom. Subsequent interference is presumably current related. Water temperature measurements taken at the Forebay site varied from 19.4 to 24.0 degrees Celsius. Water temperature generally increased over the course of the Study up to late July (**Figure 5-2**), which corresponds with an increase in air temperature over the summer months. Water temperatures generally decreased over the final four sampling events.

Dissolved oxygen measurements at the Forebay site ranged from 7.44 to 8.81 mg/L with the lowest readings taken on August 8, 2024. Dissolved oxygen measurements fluctuated throughout the course of the Study with a generally increasing trend (**Figure 5-3**). All DO measurements were above the Class 2B warmwater stream standard of 5.0 mg/L.

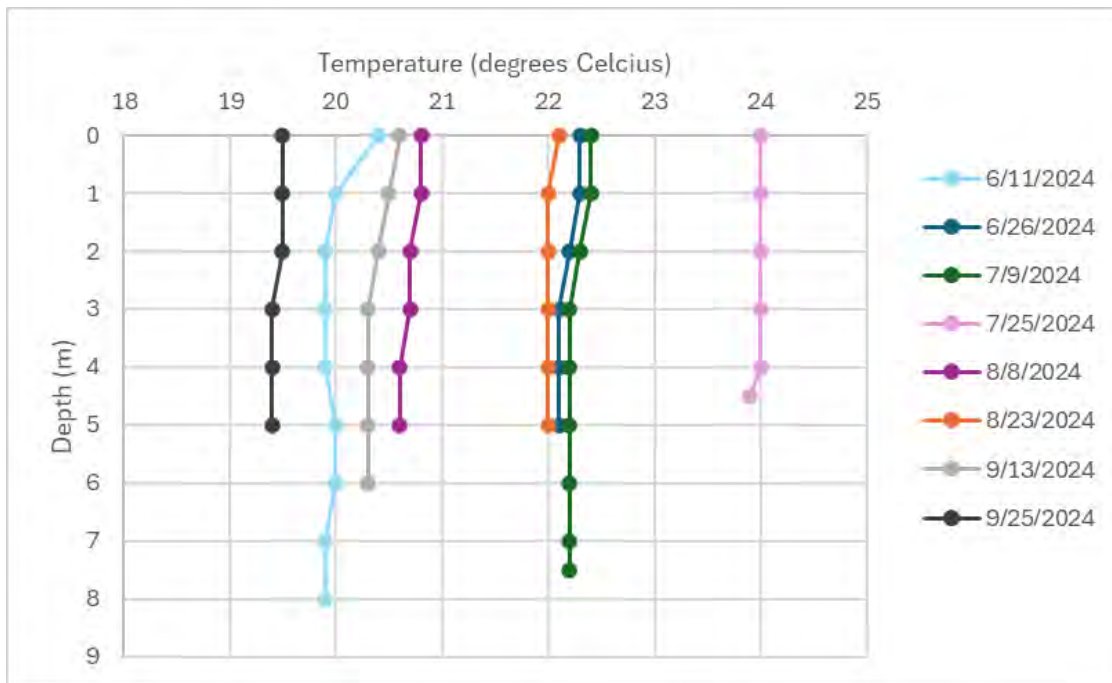
Dissolved oxygen and temperature profiles taken during each sampling event generally show a well-mixed site with minimal stratification present. Dissolved oxygen measurements collected during the June 26, 2024, September 13, 2024, and September 25, 2024, event do show DO concentrations being higher at the surface than the rest of the water column (**Figure 5-4, Figure 5-5**).



**Figure 5-2.** Median temperature for each sampling event at the Forebay site. Whiskers represent standard error.



**Figure 5-3.** Median DO concentrations (mg/L) for each sampling event at the Forebay site. Whiskers represent standard error.



**Figure 5-4.** Temperature profiles at the Forebay site for each sampling event.

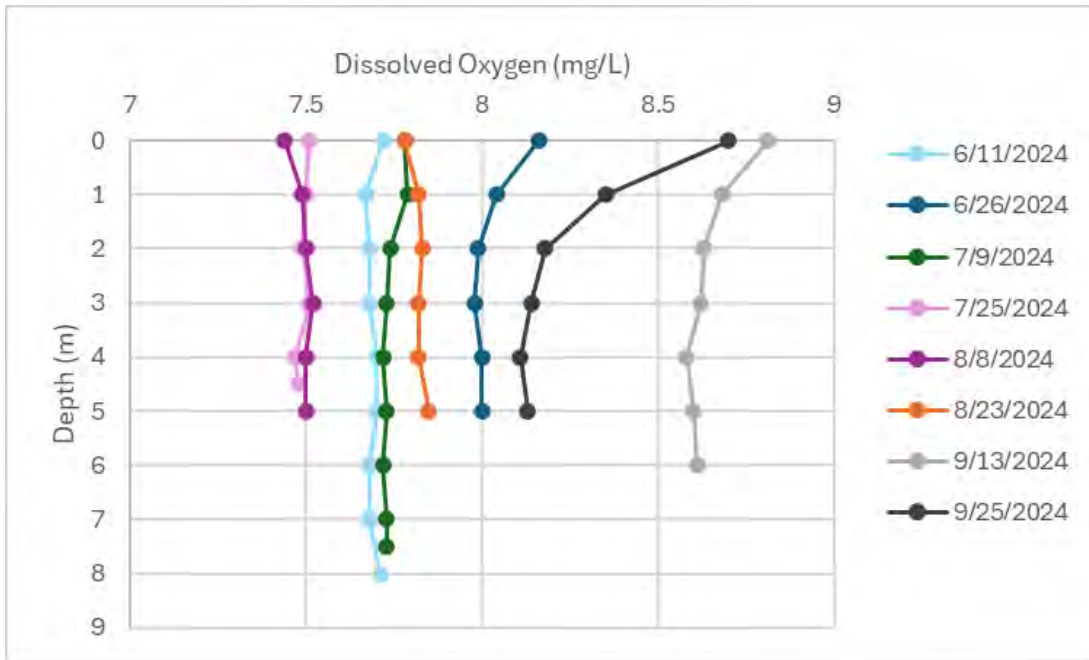


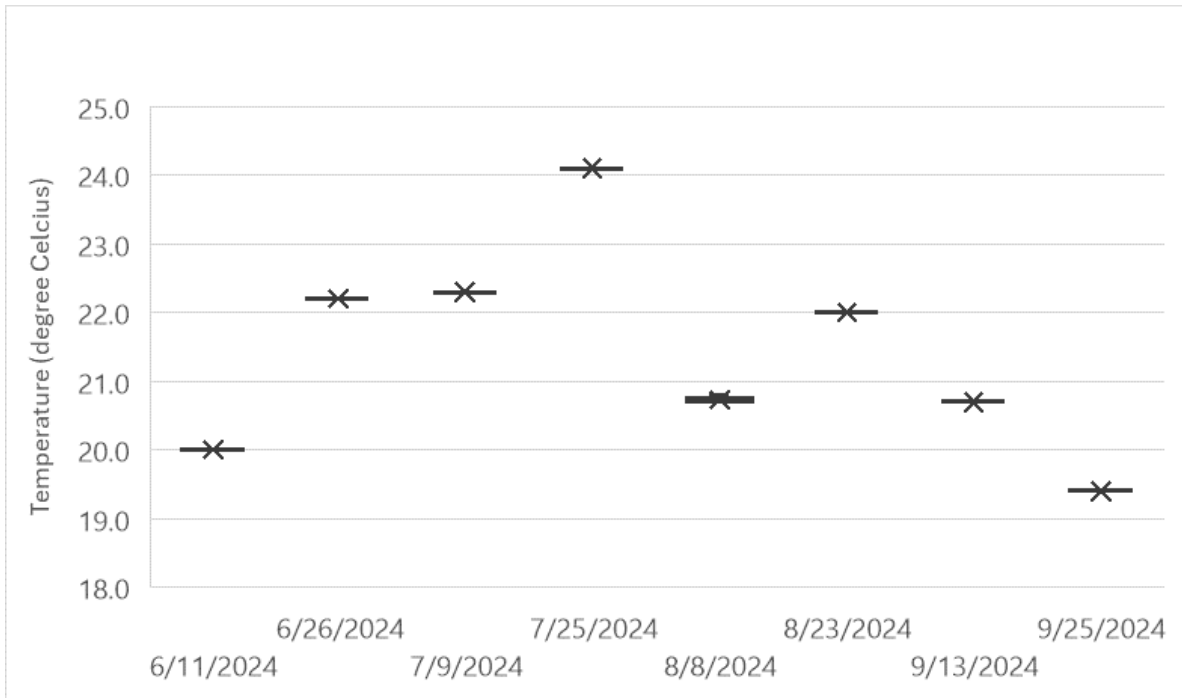
Figure 5-5. Dissolved oxygen profiles at the Forebay site for each sampling event.

## 5.2 Powerhouse Outlet

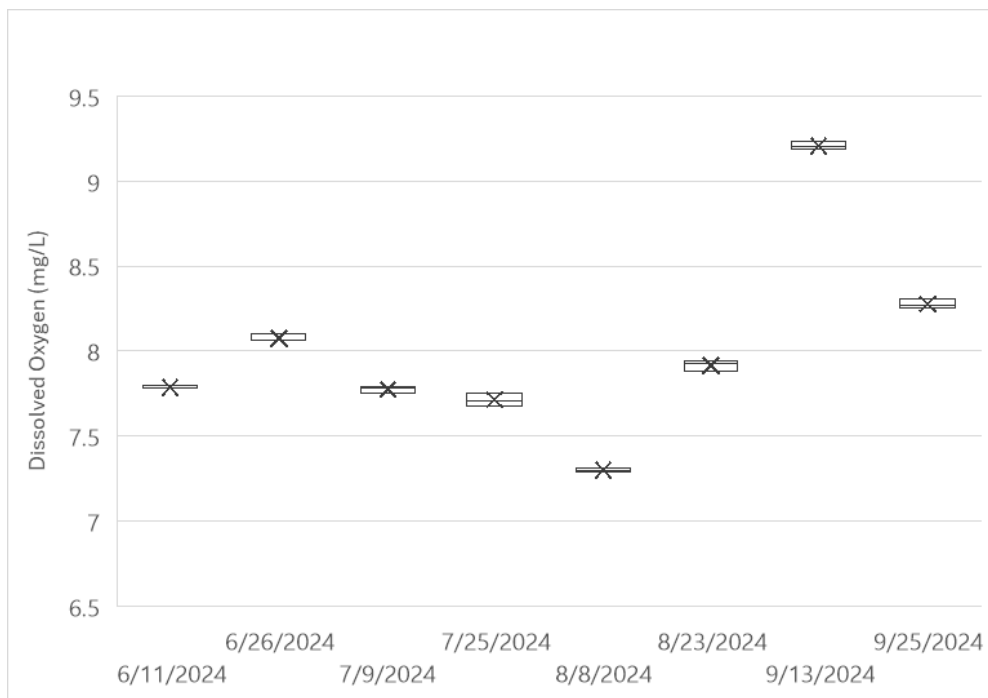
The Powerhouse Outlet site is located downstream of the Sylvan Dam. Temperature and DO measurements were taken up to 3.5 meters below the water surface during the Study. Water temperature measurements at the Powerhouse Outlet ranged from 19.4 to 24.1 degrees Celsius. Water temperature generally increased over the course of the Study up to late July (Figure 5-6), which corresponds with an increase in air temperature over the summer months. Water temperatures generally decreased over the final four sampling events, with a more than 3-degree Celsius drop noted between measurements taken on July 25, 2024, and August 8, 2024.

Dissolved oxygen measurements at the Powerhouse Outlet site ranged from 7.29 to 9.23 mg/L with the lowest readings on August 8, 2024. While DO measurements fluctuated throughout the duration of the Study, a positive trend is observed (Figure 5-7). Dissolved oxygen measurements collected at the Powerhouse Outlet site were all above the Class 2B warmwater stream standard.

Dissolved oxygen and temperature profiles taken during each sampling event generally show a well-mixed site with no stratification present (Figure 5-8, Figure 5-9).



**Figure 5-6.** Median temperature for each sampling event at the Powerhouse Outlet site. Whiskers represent standard error.



**Figure 5-7.** Median DO concentration for each sampling event at the Powerhouse Outlet site. Whiskers represent standard error.

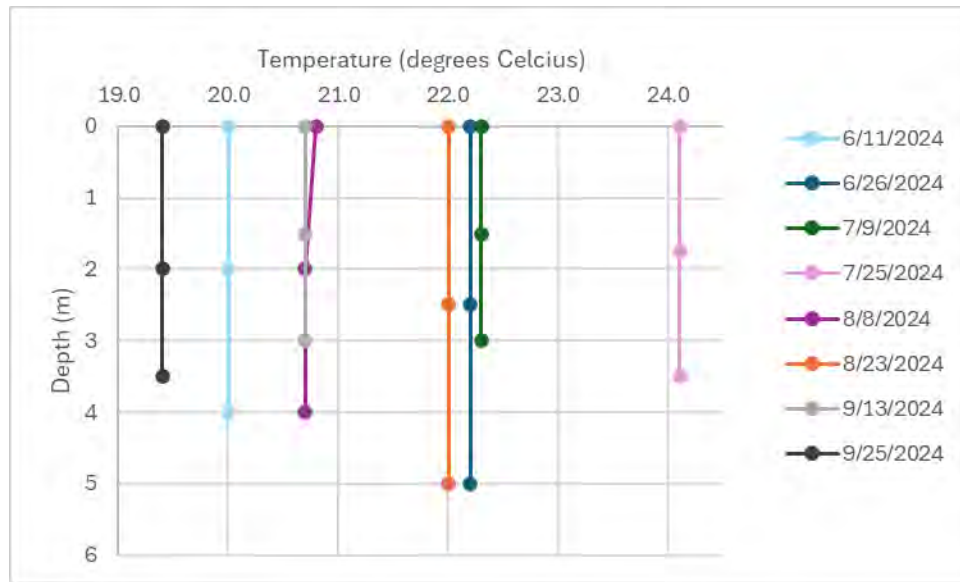


Figure 5-8. Temperature profiles at the Powerhouse Outlet site for each sampling event.

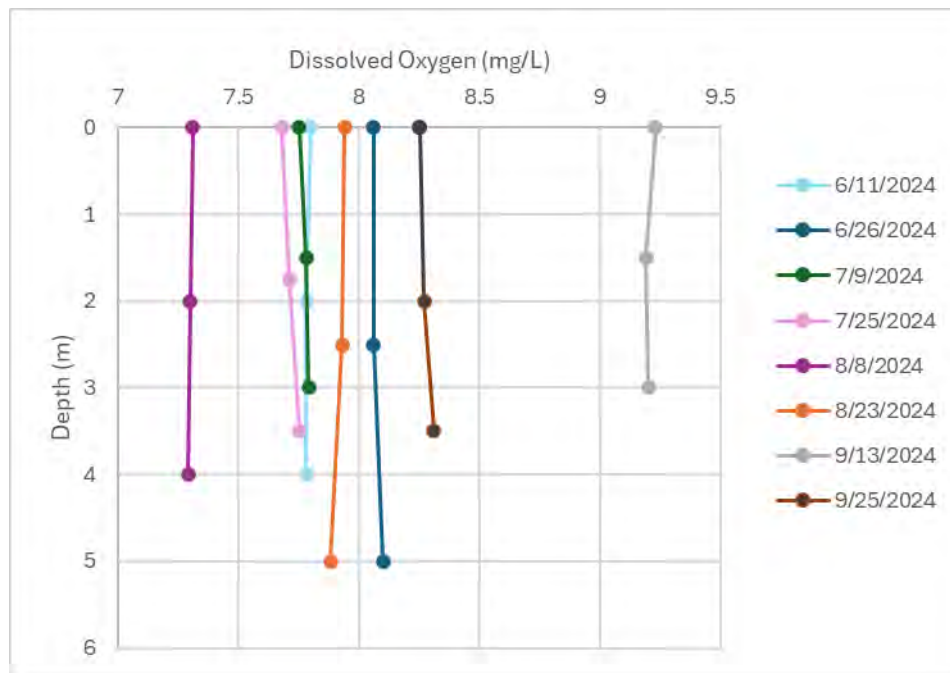


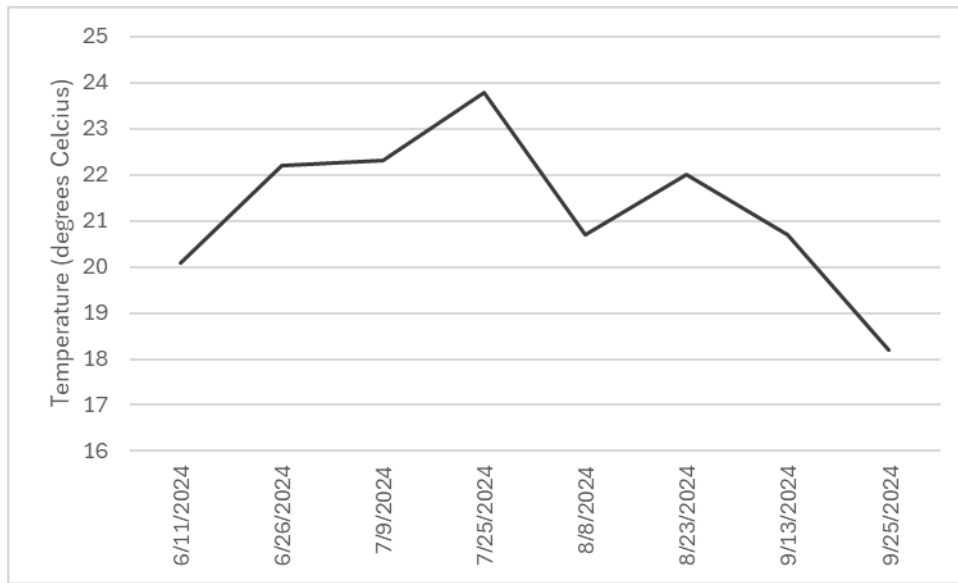
Figure 5-9. Dissolved oxygen profiles at the Powerhouse Outlet site for each sampling event.

### 5.3 Downstream of Project

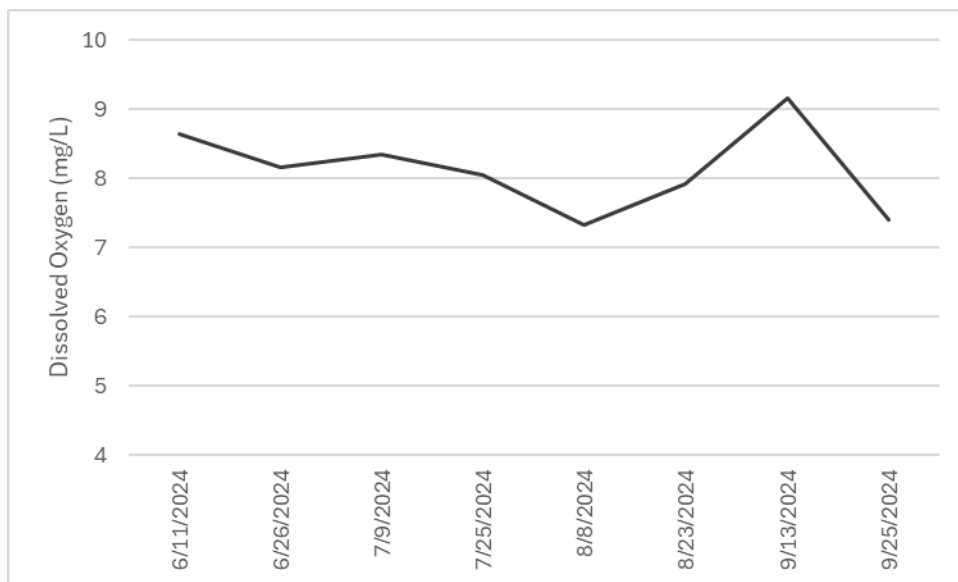
The Downstream of Project location is downstream of the Sylvan Dam. Temperature and DO measurements were taken up to 3 feet below the water surface during the Study. Temperatures at the Downstream of Project site ranged from 18.2 to 23.8 degrees Celsius. Water temperature generally increased throughout the Study up until late July (Figure 5-10) corresponding to an increase in air temperature throughout the summer months. Water temperatures generally decreased over the final four

sampling events, with a more than 3-degree Celsius drop observed between the July 25, 2024, and August 8, 2024, sampling events.

Dissolved oxygen measurements at the Downstream of Project site ranged from 7.32 to 9.17 mg/L with the lowest reading occurring on August 8, 2024. Dissolved oxygen measurements generally decreased from June to early August, with an increase observed from early August to early September, and then a final decrease from early to late September (**Figure 5-11**). All DO measurements were above the Class 2B warmwater stream standard.



**Figure 5-10.** Temperature (degrees Celsius) at the Downstream of Project location across each sampling event.



**Figure 5-11.** Dissolved oxygen (mg/L) at the Downstream of Spillway location across each sampling event.

## 6. Summary

A total of 87 DO and water temperature readings were collected over the course of the Study at the Sylvan Project.

Overall, the observed readings were typical of well-mixed, warmwater rivers in Minnesota. Water temperature increased at all sites from June 11 to July 25, 2024, and then were generally decreasing for the remainder of the monitoring period. Dissolved oxygen showed a modest increase from June 11, 2024 to June 2, 2024, followed by a drop in DO levels to August 8, 2024. This was followed by a steady increase in DO measurements to September 13, 2024, where DO then decreased through the remainder of the study period.

Mean DO and temperature at the project intake (Forebay) were 7.89 mg/L and 21.33 degrees Celsius, respectively. Mean DO increased downstream of the project intake at the Powerhouse Outlet and Downstream of Project locations, to 8.01 mg/L and 8.13 mg/L, respectively. Mean temperature increased from the project intake to the Powerhouse Outlet to 21.43 degrees Celsius and decreased to 21.25 degrees Celsius at the Downstream of Project location. Overall mean water temperature varied by less than 1-degree Celsius.

Dissolved oxygen readings at all stations were above the Minnesota Class 2B minimum stream standard of 5.00 mg/L for all sampling events. Temperatures at each monitoring location throughout the course of the study remained below 86 degrees Fahrenheit (30C) and below 3 degrees Fahrenheit above natural temperature in lakes based on monthly average of maximum daily temperatures. This data is included in **Appendix F**.

There were a few instances at the Forebay location where DO stratification occurred, but stratification was not strong and not a consistent occurrence throughout the duration of the Study.

## 7. References

Minnesota Power (2024). Revised Study Plan for the Little Falls Project (FERC P-2535), Sylvan Project (FERC P-2454), and Pillager Project (FERC P-2663). Prepared by Kleinschmidt Associates for ALLETE, Inc. January 2024.

United States. (2024, December 5) National Weather Service – NOWData NOAA Online Weather Data; Brainerd, MN. <https://www.weather.gov/wrh/Climate?wfo=dlh>

## Appendix A – Field Forms and Calibration

Allete Water Quality Study Field Form

Date: 6/11/2024  
 Ambient weather conditions: Clear 70F  
 Field personnel onsite: Bill Brown  
 Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 29.77 inHg

Actual reading before DO% calibration is accepted: 95.20%

Reading in DO% calibration environment after calibration is complete: 99.50%

ODO gain in GLP record after calibration: 1.24 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
surface	1227	85.2/7.72	20.4	
1	1226	84.4/7.67	20	
2	1225	84.4/7.68	19.9	
3	1224	84.4/7.68	19.9	
4	1223	84.6/7.70	19.9	
5	1222	84.7/7.70	20	
6	1221	84.4/7.68	20	
7	1220	84.3/7.68	19.9	
8	1219	84.6/7.71	19.9	bottom ~ 8.5 m
9				
10				
11				
12				

Downstream of Project:

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
2 ft.	1251	95.4/8.65	20.1	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
surface	1232	85.9/7.80	20.0	
mid (2 m)	1236	85.5/7.78	20.0	
bottom (4 m)	1234	85.5/7.78	20.0	

Took photos at each location (Forebay, Downstream of Project, Powerhouse Outlet)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

12:25 Level (ft.): 5.58      12:00 Water Level 1156.63      12:35 Flow 3890  
 Elevation:

Allete Water Quality Study Field Form

Date: 6/26/2024

Ambient weather conditions: Partly Cloudy 67

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 763.0 mmhg

Actual reading before DO% calibration is accepted: 104.70%

Reading in DO% calibration environment after calibration is complete: 100.40%

ODO gain in GLP record after calibration: 1.19 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
surface	1024	93.5/8.16	22.3	
1	1023	92.5/8.04	22.3	
2	1022	91.5/7.99	22.2	
3	1021	91.5/7.98	22.1	
4	1020	91.6/8.00	22.1	
5	1019	91.6/8.00	22.1	~bottom - 5.5m
6				
7				
8				
9				
10				
11				
12				

Downstream of Project:

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
3 ft	1038	99.9/8.17	22.2	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
Bottom (5 m)	1029	92.9/8.10	22.2	
Mid (2.5 m)	1030	92.6/8.06	22.2	
Top	1031	92.6/8.06	22.2	

Took photos at each location (Forebay, Downstream of Project, Powerhouse Outlet)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

10:35 Level (ft.): 5.42      10:45 Water Level 1156.46      10:30 Flow 3460  
Elevation:

Allete Water Quality Study Field Form

Date: 7/9/2024

Ambient weather conditions: Cloudy

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 761.7 mmhg

Actual reading before DO% calibration is accepted: 101.00%

Reading in DO% calibration environment after calibration is complete: 100.20%

ODO gain in GLP record after calibration: 1.18 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (%)/(mg/L)	Temperature (C°)	Notes/Comments
surface	8:49	89.7/7.78	22.4	
1	8:48	89.8/7.79	22.4	
2	8:47	89.3/7.74	22.3	
3	8:46	88.9/7.73	22.2	
4	8:45	88.7/7.72	22.2	
5	8:44	88.7/7.73	22.2	
6	8:43	88.7/7.72	22.2	
7	8:42	88.8/7.73	22.2	
8	8:41	88.8/7.73	22.2	bottom 7.5 m
9				
10				
11				
12				

Downstream of Project:

Bottom of Water	Time	Dissolved Oxygen (%)/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	900	96.0/8.35	22.3	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen (%)/(mg/L)	Temperature (C°)	Notes/Comments
Bottom (3m)	0854	89.6/7.79	22.3	
Mid (1.5 m)	0852	89.5/7.78	22.3	
Top	0851	89.1/7.75	22.3	

Took photos at each location (Forebay, Powerhouse Outlet, Downstream of Project)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

8:35 Level (ft.): 5.11      8:40 Water Level 1156.17      8:15 Flow 3060  
Elevation:

Allete Water Quality Study Field Form

Date: 7/25/2024

Ambient weather conditions: clear 68

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 769.1 mmhg

Actual reading before DO% calibration is accepted: 102.80%

Reading in DO% calibration environment after calibration is complete: 101.20%

ODO gain in GLP record after calibration: 1.17 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (mg/L)/(%)	Temperature (C°)	Notes/Comments
surface	8:58	89.2/7.51	24.0	
1	8:57	89.1/7.50	24.0	
2	8:56	89.0/7.49	24.0	
3	8:55	89.2/7.51	24.0	
4	8:54	88.8/7.47	24.0	
5	8:53	88.7/7.48	23.9	Bottom 4.5 m
6				
7				
8				
9				
10				
11				
12				

Downstream of Project:

Bottom of Water	Time	Dissolved Oxygen (mg/L)/(%)	Temperature (C°)	Notes/Comments
2 ft	8:10	95.3/8.05	23.8	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen (mg/L)/(%)	Temperature (C°)	Notes/Comments
Bottom (3.5m)	09:03	92.4/7.75	24.1	
Mid (1.75 m)	09:02	91.8/7.71	24.1	
Top	09:01	91.4/7.68	24.1	

Took photos at each location (Forebay, Downstream of Project, Powerhouse Outlet)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

9:10 Level (ft.): 4.43      8:25 Water Level 1155.42      9:00 Flow (cfs): 1710  
Elevation:

Allete Water Quality Study Field Form

Date: 8/8/2024

Ambient weather conditions: sunny 60

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 765.3 mmhg

Actual reading before DO% calibration is accepted: 98.60%

Reading in DO% calibration environment after calibration is complete: 100.70%

ODO gain in GLP record after calibration: 1.19 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen %)/(mg/L)	Temperature (C°)	Notes/Comments
surface	8:06	82.9/7.44	20.8	
1	8:05	83.3/7.49	20.8	
2	8:04	83.5/7.50	20.7	
3	8:03	83.7/7.52	20.7	
4	8:02	83.5/7.50	20.6	
5	8:01	83.4/7.50	20.6	
6				
7				
8				
9				
10				
11				
12				

Downstream of Project:

Bottom of Water Column Depth (ft.)	Time	Dissolved Oxygen %)/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	8:17	81.9/7.32	20.7	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen %)/(mg/L)	Temperature (C°)	Notes/Comments
Bottom (4m)	8:09	81.2/7.29	20.7	
Mid (2 m)	8:10	81.4/7.30	20.7	
Top	8:11	81.6/7.31	20.8	

Took photos at each location (Forebay, Downstream of Project, Powerhouse Outlet)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

7:55 Level (ft.): 4.86      7:50 Water Level 1155.92      8:20 Flow (cfs): 2470  
Elevation:

Allete Water Quality Study Field Form

Date: 8/23/2024  
 Ambient weather conditions: Overcast 65  
 Field personnel onsite: Bill Brown  
 Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 763.4 mmhg

Actual reading before DO% calibration is accepted: 101.70%

Reading in DO% calibration environment after calibration is complete: 100.40%

ODO gain in GLP record after calibration: 1.18 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
surface	8:18	88.4/7.78	22.1	
1	8:17	89.4/7.82	22.0	
2	8:16	89.6/7.83	22.0	
3	8:15	89.5/7.82	22.0	
4	8:14	89.4/7.82	22.0	
5	8:13	89.7/7.85	22.0	bottom
6				
7				
8				
9				
10				
11				
12				

Downstream of Project:

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
2 ft	8:30	90.6/7.93	22.0	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
Bottom (5m)	08:21	90.1/7.88	22.0	
Mid (2.5 m)	08:22	90.7/7.93	22.0	
Top	08:23	90.8/7.94	22.0	

Took photos at each location (Forebay, Downstream of Project, Powerhouse Outlet)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

8:15 Level (ft.): 4.83      8:20 Water Level      1155.89      0.403 Flow (cfs): 2400  
 Elevation:

Allete Water Quality Study Field Form

Date: 9/13/2024

Ambient weather conditions: clear 62

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 764.3 mmhg

Actual reading before DO% calibration is accepted: 101.60%

Reading in DO% calibration environment after calibration is complete: 100.60%

ODO gain in GLP record after calibration: 1.17 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (%)/(mg/L)	Temperature (C°)	Notes/Comments
surface	8:15	98.4/8.81	20.6	
1	8:14	96.0/8.68	20.5	
2	8:13	95.5/8.63	20.4	
3	8:12	95.2/8.62	20.3	
4	8:11	95.0/8.58	20.3	
5	8:10	95.1/8.60	20.3	
6	8:09	95.1/8.61	20.3	bottom
7				
8				
9				
10				
11				
12				

Downstream of Project:

Bottom of Water	Time	Dissolved Oxygen (%)/(mg/L)	Temperature (C°)	Notes/Comments
2 ft	8:26	98.9/9.17	20.7	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen (%)/(mg/L)	Temperature (C°)	Notes/Comments
Bottom (3m)	8:16	99.8/9.23	20.7	
Mid (1.5 m)	8:17	99.4/9.19	20.7	
Top	8:18	99.5/9.20	20.7	

Took photos at each location (Forebay, Downstream of Project, Powerhouse Outlet)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

8:15 Level (ft.): 3.93      8:05 Water Level 1154.99      8:25 Flow (cfs): 1030  
Elevation:

Allete Water Quality Study Field Form

Date: 9/25/2024

Ambient weather conditions: clear 56

Field personnel onsite: Bill Brown

Mn Power Location (circle one): Sylvan Little Falls

**Field calibration for YSI:**

YSI Serial Number: 20L104330

Dissolved oxygen

Barometric pressure: 763.4 mmhg

Actual reading before DO% calibration is accepted: 100.50%

Reading in DO% calibration environment after calibration is complete: 100.40%

ODO gain in GLP record after calibration: 1.17 **Acceptable range is 0.75 to 1.50**

Forebay Location: collect DO and temperature readings at 1-meter intervals from the surface to bottom of water column

Depth (m)	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
surface	9:42	94.9/8.70	19.5	
1	9:41	92.2/8.35	19.5	
2	9:40	89.1/8.18	19.5	
3	9:39	88.6/8.14	19.4	
4	9:38	88.1/8.11	19.4	
5	9:37	88.2/8.13	19.4	bottom
6				
7				
8				
9				
10				
11				
12				

Downstream of Project:

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
~1 ft	9:54	78.5/7.40	18.2	

Powerhouse Outlet

Bottom of Water	Time	Dissolved Oxygen (mg/L)	Temperature (C°)	Notes/Comments
Bottom (3.5m)	9:46	90.3/8.31	19.4	
Mid (2 m)	9:47	89.9/8.27	19.4	
Top	9:48	89.7/8.25	19.4	

Took photos at each location (Forebay, Downstream of Project, Powerhouse Outlet)

Discharge recorded at downstream stream gauge (circle one) 05247500 0526700:

Other notes/comments: Stream gauge data is taken from an online source and times associated with measurements are within approximately 1 hour of on site measurements

9:30 Level (ft.): 9.72      9:40 Water Level      1154.78      9:50 Flow (cfs): 776  
Elevation:

## Appendix B – Site Photos

Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
1**Date:**  
6/11/24**Location of Photo:**  
Sylvan Forebay**Description:**

Taken from the walkway on the upriver side of power plant, according to the suggested location on map.

**Photo No.**  
2**Date:**  
6/11/24**Location of Photo:**  
Sylvan downstream  
of powerplant**Description:**

Collected from the catwalk on the downstream side of the powerplant according to the location suggested on the map



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
3**Date:**  
6/11/24**Location of Photo:**  
Sylvan downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.

**Photo No.**  
4**Date:**  
6/26/24**Location of Photo:**  
Sylvan Forebay**Description:**

Taken from the  
walkway on the  
upriver side of power  
plant, according to  
the suggested  
location on map.



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
5**Date:**  
6/26/24**Location of Photo:**  
Sylvan downstream  
of powerhouse**Description:**

Collected from the  
catwalk on the  
downstream side of the  
powerplant according  
to the location  
suggested on the map

**Photo No.**  
6**Date:**  
6/26/24**Location of Photo:**  
Sylvan downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.



**Client Name:** Allete, Inc.

**Site Location:**  
Sylvan Dam, MN

**Project No.** 60731187

**Photo No.**  
7      **Date:**  
7/9/24

**Location of Photo:**  
Sylvan Forebay

**Description:**

Taken from the walkway on the upriver side of power plant, at the suggested location according to the map.



**Photo No.**  
8      **Date:**  
7/9/24

**Location of Photo:**  
Sylvan downstream  
of powerhouse

**Description:**

Collected downstream of power plant, according to the suggested area on the map.



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
9**Date:**  
7/9/24**Location of Photo:**  
Sylvan downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.

**Photo No.**  
10**Date:**  
7/25/24**Location of Photo:**  
Sylvan Forebay**Description:**

Taken from the  
walkway on the  
upriver side of power  
plant, at the  
suggested location  
according to the map.



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
11

**Date:**  
7/25/24

**Location of Photo:**  
Sylvan downstream  
of powerhouse

**Description:**

Collected downstream  
of power plant,  
according to the  
suggested area on the  
map.



**Photo No.**  
12

**Date:**  
7/25/24

**Location of Photo:**  
Sylvan downstream  
of spillway

**Description:**

Collected on the east  
side of the river  
according to the  
location suggested on  
the map.



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
13**Date:**  
8/8/24**Location of Photo:**  
Sylvan Forebay**Description:**

Taken from the walkway on the upriver side of power plant, at the suggested location according to the map.

**Photo No.**  
14**Date:**  
8/8/24**Location of Photo:**  
Sylvan downstream of powerhouse**Description:**

Collected downstream of power plant, according to the suggested area on the map.



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
15**Date:**  
8/8/24**Location of Photo:**  
Sylvan downstream of  
spillway**Description:**

Collected on the east  
side of the river  
according to the location  
suggested on the map.

**Photo No.**  
16**Date:**  
8/23/24**Location of Photo:**  
Sylvan Forebay**Description:**

Taken from the walkway  
on the upriver side of  
power plant, at the  
suggested location  
according to the map.



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
17**Date:**  
8/23/24**Location of Photo:**  
Sylvan downstream of  
powerhouse**Description:**

Collected downstream of  
power plant, according to  
the suggested area on  
the map.

**Photo No.**  
18**Date:**  
8/23/24**Location of Photo:**  
Sylvan downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the location  
suggested on the map.



Client Name: Allete, Inc..

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
19**Date:**  
9/13/24**Location of Photo:**  
Sylvan Forebay**Description:**

Taken from the walkway on the upriver side of power plant, at the suggested location according to the map.

**Photo No.**  
20**Date:**  
9/13/24**Location of Photo:**  
Sylvan downstream  
of powerhouse**Description:**

Collected downstream of power plant, according to the suggested area on the map.



**Client Name: Allete, Inc.****Site Location:  
Sylvan Dam, MN****Project No. 60731187****Photo No.**  
21**Date:**  
9/13/24**Location of Photo:**  
Sylvan downstream of  
spillway**Description:**

Collected on the east  
side of the river  
according to the location  
suggested on the map.

**Photo No.**  
22**Date:**  
9/25/24**Location of Photo:**  
Sylvan Forebay**Description:**

Taken from the walkway  
on the upriver side of  
power plant, at the  
suggested location  
according to the map.



Client Name: Allete, Inc.

Site Location:  
Sylvan Dam, MN

Project No. 60731187

**Photo No.**  
23      **Date:**  
9/25/24**Location of Photo:**  
Sylvan downstream of  
powerhouse**Description:**

Collected downstream of  
power plant, according to  
the suggested area on  
the map.

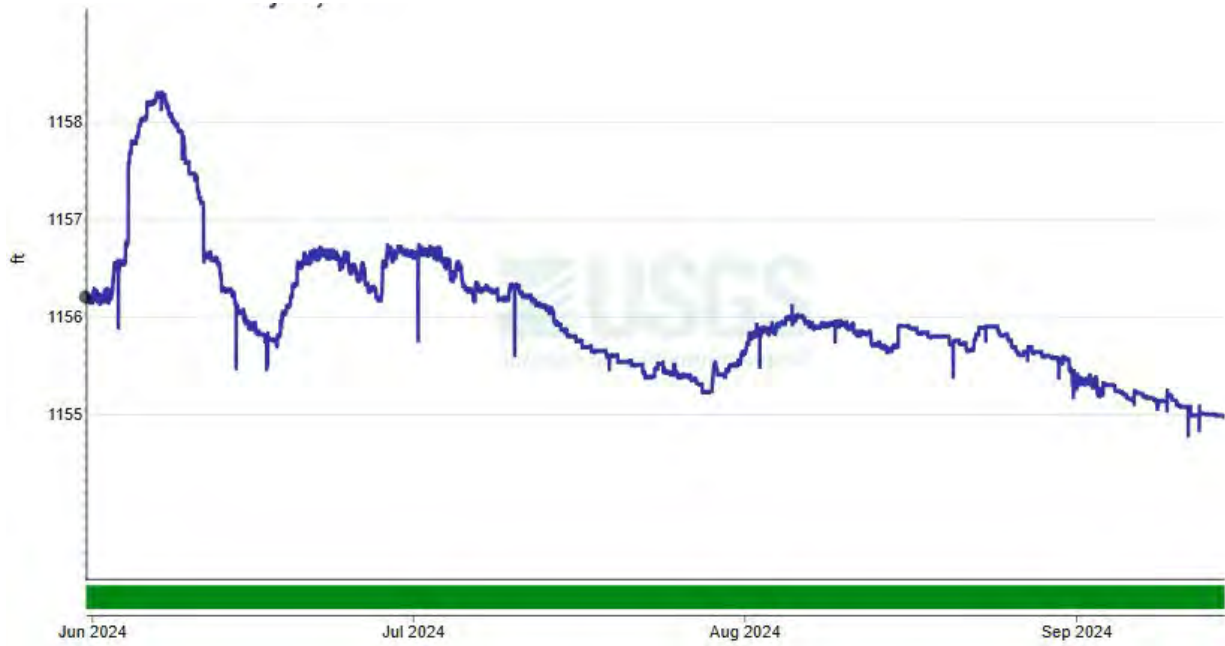
**Photo No.**  
24      **Date:**  
9/25/24**Location of Photo:**  
Sylvan downstream  
of spillway**Description:**

Collected on the east  
side of the river  
according to the location  
suggested on the map.



## **Appendix C – USGS Stream Gauge 05247500 Crow Wing River near Pillager, MN Data**

Crow Wing River near Pillager, MN – 05247500 Stream water level elevation above NAVD 1988, in ft.



Crow Wing River near Pillager, MN – 05247500 Gauge height in ft.



Crow Wing River near Pillager, MN – 05247500 Discharge in cubic feet per second



## Appendix D – Minnesota Power Site Data

Date & Time	SYLVAN POND LEVEL HOURLY AVERAGE (NGVD 29)	SYLVAN TAIL LEVEL HOURLY AVERAGE (NGVD 29)	SYLVAN TOTAL STATION FLOW HOURLY AVERAGE
11-Jun-24 12:00:00	1176.93	1156.66	3743
26-Jun-24 10:00:00	1177.04	1156.56	3320
09-Jul-24 08:00:00	1177.06	1156.27	2864
25-Jul-24 08:00:00	1177.02	1155.50	1451
08-Aug-24 08:00:00	1176.96	1156.00	2223
23-Aug-24 08:00:00	1177.03	1155.92	1655
13-Sep-24 08:00:00	1177.04	1154.97	896
25-Sep-24 09:00:00	1176.99	1154.76	754
Minimum	1176.93		
Maximum	1177.06		

## Appendix E – All Site Data

## Forebay - Sylvan

## Monitoring Event

Date	Time	Depth (m)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Temperature (Celcius)
6/11/2024	12:27	0	85.2	7.72	20.4
6/11/2024	12:26	1	84.4	7.67	20
6/11/2024	12:25	2	84.4	7.68	19.9
6/11/2024	12:24	3	84.4	7.68	19.9
6/11/2024	12:23	4	84.6	7.7	19.9
6/11/2024	12:22	5	84.7	7.7	20
6/11/2024	12:21	6	84.4	7.68	20
6/11/2024	12:20	7	84.3	7.68	19.9
6/11/2024	12:19	8	84.6	7.71	19.9
6/26/2024	10:24	0	93.5	8.16	22.3
6/26/2024	10:23	1	92.5	8.04	22.3
6/26/2024	10:22	2	91.5	7.99	22.2
6/26/2024	10:21	3	91.5	7.98	22.1
6/26/2024	10:20	4	91.6	8	22.1
6/26/2024	10:19	5	91.6	8	22.1
7/9/2024	8:49	0	89.7	7.78	22.4
7/9/2024	8:48	1	89.8	7.79	22.4
7/9/2024	8:47	2	89.3	7.74	22.3
7/9/2024	8:46	3	88.9	7.73	22.2
7/9/2024	8:45	4	88.7	7.72	22.2
7/9/2024	8:44	5	88.7	7.73	22.2
7/9/2024	8:43	6	88.7	7.72	22.2
7/9/2024	8:42	7	88.8	7.73	22.2
7/9/2024	8:41	7.5	88.8	7.73	22.2
7/25/2024	8:58	0	89.2	7.51	24
7/25/2024	8:57	1	89.1	7.5	24
7/25/2024	8:56	2	89	7.49	24
7/25/2024	8:55	3	89.2	7.51	24
7/25/2024	8:54	4	88.8	7.47	24
7/25/2024	8:53	4.5	88.7	7.48	23.9
8/8/2024	8:06	0	82.9	7.44	20.8
8/8/2024	8:05	1	83.3	7.49	20.8
8/8/2024	8:04	2	83.5	7.5	20.7
8/8/2024	8:03	3	83.7	7.52	20.7
8/8/2024	8:02	4	83.5	7.5	20.6
8/8/2024	8:01	5	83.4	7.5	20.6
8/23/2024	8:18	0	88.4	7.78	22.1
8/23/2024	8:17	1	89.4	7.82	22.0
8/23/2024	8:16	2	89.6	7.83	22.0
8/23/2024	8:15	3	89.5	7.82	22.0
8/23/2024	8:14	4	89.4	7.82	22.0

8/23/2024	8:13	5	89.7	7.85	22.0
9/13/2024	8:15	0	98.4	8.81	20.6
9/13/2024	8:14	1	96	8.68	20.5
9/13/2024	8:13	2	95.5	8.63	20.4
9/13/2024	8:12	3	95.2	8.62	20.3
9/13/2024	8:11	4	95	8.58	20.3
9/13/2024	8:10	5	95.1	8.6	20.3
9/13/2024	8:09	6	95.1	8.61	20.3
9/25/2024	9:42	0	94.9	8.7	19.5
9/25/2024	9:41	1	92.2	8.35	19.5
9/25/2024	9:40	2	89.1	8.18	19.5
9/25/2024	9:39	3	88.6	8.14	19.4
9/25/2024	9:38	4	88.1	8.11	19.4
9/25/2024	9:37	5	88.2	8.13	19.4

Powerhouse Outlet - Sylvan

Monitoring Event			Dissolved	Dissolved	Temperature
Date	Time	Depth (m)	Oxygen (%)	Oxygen (mg/L)	(Celcius)
6/11/2024	12:34	4	85.5	7.78	20.0
6/11/2024	12:36	2	85.5	7.78	20
6/11/2024	12:32	0	85.9	7.8	20
6/26/2024	10:29	5	92.9	8.1	22.2
6/26/2024	10:30	2.5	92.6	8.06	22.2
6/26/2024	10:31	0	92.6	8.06	22.2
7/9/2024	8:54	3	89.6	7.79	22.3
7/9/2024	8:52	1.5	89.5	7.78	22.3
7/9/2024	8:51	0	89.1	7.75	22.3
7/25/2024	9:03	3.5	92.4	7.75	24.1
7/25/2024	9:02	1.75	91.8	7.71	24.1
7/25/2024	9:01	0	91.4	7.68	24.1
8/8/2024	8:09	4	81.2	7.29	20.7
8/8/2024	8:10	2	81.4	7.3	20.7
8/8/2024	8:11	0	81.6	7.31	20.8
8/23/2024	8:21	5	90.1	7.88	22.0
8/23/2024	8:22	2.5	90.7	7.93	22.0
8/23/2024	8:23	0	90.8	7.94	22.0
9/13/2024	8:16	0	99.8	9.23	20.7
9/13/2024	8:17	1.5	99.4	9.19	20.7
9/13/2024	8:18	3	99.5	9.2	20.7
9/25/2024	9:46	3.5	90.3	8.31	19.4
9/25/2024	9:47	2	89.9	8.27	19.4
9/25/2024	9:48	0	89.7	8.25	19.4

Downstream of Project - Sylvan

Monitoring Event			Dissolved	Dissolved	Temperature
Date	Time	Depth (ft)	Oxygen (%)	Oxygen (mg/L)	(Celcius)
6/11/2024	12:51	2	95.4	8.65	20.1
6/26/2024	10:38	3	99.9	8.17	22.2
7/9/2024	9:00	2	96	8.35	22.3
7/25/2024	8:10	2	95.3	8.05	23.8
8/8/2024	8:17	2	81.9	7.32	20.7
8/23/2024	8:30	2	90.6	7.93	22.0
9/13/2024	8:26	2	98.9	9.17	20.7
9/25/2024	9:25	1	78.5	7.4	18.2

## Appendix F – Climatological Data; Brainerd, MN

**Climatological Data for BRAINERD, MN - June 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-06-01	75	49	62.0	1.4	3	0	0.00	0.0	0
2024-06-02	76	50	63.0	2.1	2	0	0.02	0.0	0
2024-06-03	73	54	63.5	2.3	1	0	1.80	0.0	0
2024-06-04	78	57	67.5	5.9	0	3	0.00	0.0	0
2024-06-05	84	50	67.0	5.1	0	2	0.71	0.0	0
2024-06-06	76	52	64.0	1.9	1	0	0.12	0.0	0
2024-06-07	66	47	56.5	-5.9	8	0	0.00	0.0	0
2024-06-08	75	50	62.5	-0.2	2	0	0.00	0.0	0
2024-06-09	77	51	64.0	1.0	1	0	0.00	0.0	0
2024-06-10	66	43	54.5	-8.8	10	0	0.00	0.0	0
2024-06-11	74	44	59.0	-4.6	6	0	0.22	0.0	0
2024-06-12	78	44	61.0	-2.8	4	0	0.13	0.0	0
2024-06-13	85	57	71.0	6.9	0	6	0.10	0.0	0
2024-06-14	81	52	66.5	2.1	0	2	0.00	0.0	0
2024-06-15	80	53	66.5	1.9	0	2	0.00	0.0	0
2024-06-16	73	60	66.5	1.6	0	2	0.03	0.0	0
2024-06-17	81	56	68.5	3.4	0	4	0.02	0.0	0
2024-06-18	72	57	64.5	-0.9	0	0	0.17	0.0	0
2024-06-19	79	57	68.0	2.4	0	3	1.07	0.0	0
2024-06-20	71	56	63.5	-2.3	1	0	T	0.0	0
2024-06-21	72	57	64.5	-1.5	0	0	T	0.0	0
2024-06-22	70	57	63.5	-2.8	1	0	0.01	0.0	0
2024-06-23	63	54	58.5	-8.0	6	0	0.17	0.0	0
2024-06-24	80	56	68.0	1.3	0	3	0.00	0.0	0
2024-06-25	83	60	71.5	4.6	0	7	T	0.0	0
2024-06-26	85	56	70.5	3.4	0	6	0.00	0.0	0
2024-06-27	85	50	67.5	0.2	0	3	0.00	0.0	0
2024-06-28	72	53	62.5	-4.9	2	0	2.05	0.0	0
2024-06-29	78	58	68.0	0.4	0	3	0.03	0.0	0
2024-06-30	68	45	56.5	-11.3	8	0	0.00	0.0	0
<b>Sum</b>	2276	1585	-	-	56	46	6.65	0.0	-
<b>Average</b>	75.9	52.8	64.4	-0.2	-	-	-	-	0.0
<b>Normal</b>	75.8	53.3	64.6	-	85	72	4.64	0.0	-

<b>Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).</b>
Max Temperature : 7am
Min Temperature : 7am
Precipitation : 7am
Snowfall : unknown
Snow Depth : 7am

**Climatological Data for BRAINERD, MN - July 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-07-01	73	48	60.5	-7.4	4	0	0.03	0.0	0
2024-07-02	77	48	62.5	-5.6	2	0	0.17	0.0	0
2024-07-03	77	58	67.5	-0.7	0	3	0.00	0.0	0
2024-07-04	79	59	69.0	0.7	0	4	0.00	0.0	0
2024-07-05	75	58	66.5	-2.0	0	2	0.77	0.0	0
2024-07-06	79	57	68.0	-0.6	0	3	0.00	0.0	0
2024-07-07	79	56	67.5	-1.2	0	3	1.08	0.0	0
2024-07-08	78	57	67.5	-1.3	0	3	0.10	0.0	0
2024-07-09	82	58	70.0	1.1	0	5	0.00	0.0	0
2024-07-10	83	60	71.5	2.6	0	7	0.00	0.0	0
2024-07-11	86	60	73.0	4.0	0	8	0.00	0.0	0
2024-07-12	84	62	73.0	3.9	0	8	0.00	0.0	0
2024-07-13	85	64	74.5	5.4	0	10	0.00	0.0	0
2024-07-14	86	66	76.0	6.8	0	11	0.16	0.0	0
2024-07-15	87	65	76.0	6.8	0	11	0.07	0.0	0
2024-07-16	83	59	71.0	1.7	0	6	0.00	0.0	0
2024-07-17	78	56	67.0	-2.3	0	2	0.00	0.0	0
2024-07-18	74	51	62.5	-6.8	2	0	0.00	0.0	0
2024-07-19	78	53	65.5	-3.8	0	1	0.00	0.0	0
2024-07-20	84	53	68.5	-0.8	0	4	0.00	0.0	0
2024-07-21	86	61	73.5	4.2	0	9	0.29	0.0	0
2024-07-22	83	62	72.5	3.2	0	8	0.00	0.0	0
2024-07-23	81	62	71.5	2.2	0	7	0.01	0.0	0
2024-07-24	73	54	63.5	-5.7	1	0	0.00	0.0	0
2024-07-25	79	53	66.0	-3.2	0	1	0.00	0.0	0
2024-07-26	82	54	68.0	-1.2	0	3	0.00	0.0	0
2024-07-27	87	67	77.0	7.9	0	12	0.00	0.0	0
2024-07-28	91	73	82.0	12.9	0	17	0.00	0.0	0
2024-07-29	83	65	74.0	5.0	0	9	0.69	0.0	0
2024-07-30	84	64	74.0	5.0	0	9	0.23	0.0	0
2024-07-31	87	63	75.0	6.1	0	10	0.04	0.0	0
<b>Sum</b>	2523	1826	-	-	9	176	3.64	0.0	-
<b>Average</b>	81.4	58.9	70.1	1.2	-	-	-	-	0.0
<b>Normal</b>	80.1	57.8	68.9	-	26	148	4.37	0.0	-

<b>Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).</b>
Max Temperature : 7am
Min Temperature : 7am
Precipitation : 7am
Snowfall : unknown
Snow Depth : 7am

**Climatological Data for BRAINERD, MN - August 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-08-01	86	64	75.0	6.2	0	10	0.32	0.0	0
2024-08-02	83	62	72.5	3.8	0	8	0.05	0.0	0
2024-08-03	86	57	71.5	2.9	0	7	0.00	0.0	0
2024-08-04	86	57	71.5	3.0	0	7	0.15	0.0	0
2024-08-05	77	60	68.5	0.1	0	4	0.02	0.0	0
2024-08-06	64	51	57.5	-10.8	7	0	0.60	0.0	0
2024-08-07	77	52	64.5	-3.7	0	0	0.00	0.0	0
2024-08-08	68	52	60.0	-8.1	5	0	0.60	0.0	0
2024-08-09	65	52	58.5	-9.5	6	0	0.02	0.0	0
2024-08-10	67	47	57.0	-10.9	8	0	0.00	0.0	0
2024-08-11	72	47	59.5	-8.2	5	0	0.00	0.0	0
2024-08-12	78	48	63.0	-4.6	2	0	0.00	0.0	0
2024-08-13	80	51	65.5	-1.9	0	1	0.00	0.0	0
2024-08-14	81	53	67.0	-0.3	0	2	0.00	0.0	0
2024-08-15	78	59	68.5	1.4	0	4	0.25	0.0	0
2024-08-16	78	59	68.5	1.5	0	4	0.03	0.0	0
2024-08-17	75	63	69.0	2.2	0	4	0.10	0.0	0
2024-08-18	81	58	69.5	2.9	0	5	0.16	0.0	0
2024-08-19	81	57	69.0	2.6	0	4	0.00	0.0	0
2024-08-20	81	58	69.5	3.3	0	5	0.00	0.0	0
2024-08-21	77	58	67.5	1.5	0	3	0.00	0.0	0
2024-08-22	79	58	68.5	2.7	0	4	0.00	0.0	0
2024-08-23	70	60	65.0	-0.6	0	0	0.60	0.0	0
2024-08-24	74	60	67.0	1.6	0	2	0.00	0.0	0
2024-08-25	85	60	72.5	7.3	0	8	0.00	0.0	0
2024-08-26	85	70	77.5	12.6	0	13	0.01	0.0	0
2024-08-27	87	64	75.5	10.8	0	11	0.05	0.0	0
2024-08-28	79	59	69.0	4.6	0	4	T	0.0	0
2024-08-29	75	60	67.5	3.3	0	3	0.00	0.0	0
2024-08-30	81	52	66.5	2.6	0	2	0.42	0.0	0
2024-08-31	79	52	65.5	1.9	0	1	0.00	0.0	0
<b>Sum</b>	2415	1760	-	-	33	116	3.38	0.0	-
<b>Average</b>	77.9	56.8	67.3	0.6	-	-	-	-	0.0
<b>Normal</b>	78.4	55.0	66.7	-	48	100	3.59	0.0	-

<b>Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).</b>
Max Temperature : 7am
Min Temperature : 7am
Precipitation : 7am
Snowfall : unknown
Snow Depth : 7am

**Climatological Data for BRAINERD, MN - September 2024**

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-09-01	83	50	66.5	3.2	0	2	0.00	0.0	0
2024-09-02	73	45	59.0	-4.0	6	0	0.00	0.0	0
2024-09-03	74	45	59.5	-3.2	5	0	0.00	0.0	0
2024-09-04	77	56	66.5	4.1	0	2	0.00	0.0	0
2024-09-05	81	58	69.5	7.4	0	5	0.07	0.0	0
2024-09-06	69	45	57.0	-4.8	8	0	0.00	0.0	0
2024-09-07	69	43	56.0	-5.4	9	0	0.00	0.0	0
2024-09-08	70	43	56.5	-4.6	8	0	0.00	0.0	0
2024-09-09	80	50	65.0	4.3	0	0	0.00	0.0	0
2024-09-10	83	50	66.5	6.1	0	2	0.00	0.0	0
2024-09-11	77	53	65.0	5.0	0	0	0.00	0.0	0
2024-09-12	85	53	69.0	9.4	0	4	0.00	0.0	0
2024-09-13	85	56	70.5	11.2	0	6	0.00	0.0	0
2024-09-14	85	56	70.5	11.6	0	6	0.00	0.0	0
2024-09-15	79	56	67.5	9.0	0	3	0.00	0.0	0
2024-09-16	85	63	74.0	15.9	0	9	0.00	0.0	0
2024-09-17	87	64	75.5	17.8	0	11	0.00	0.0	0
2024-09-18	86	67	76.5	19.2	0	12	0.00	0.0	0
2024-09-19	79	65	72.0	15.2	0	7	0.12	0.0	0
2024-09-20	82	57	69.5	13.1	0	5	0.00	0.0	0
2024-09-21	78	55	66.5	10.5	0	2	0.06	0.0	0
2024-09-22	79	44	61.5	6.0	3	0	0.00	0.0	0
2024-09-23	68	40	54.0	-1.1	11	0	0.00	0.0	0
2024-09-24	70	40	55.0	0.3	10	0	0.00	0.0	0
2024-09-25	70	45	57.5	3.3	7	0	0.00	0.0	0
2024-09-26	81	45	63.0	9.2	2	0	0.00	0.0	0
2024-09-27	83	48	65.5	12.2	0	1	0.00	0.0	0
2024-09-28	82	46	64.0	11.1	1	0	0.00	0.0	0
2024-09-29	86	45	65.5	13.1	0	1	0.00	0.0	0
2024-09-30	83	46	64.5	12.5	0	0	0.00	0.0	0
<b>Sum</b>	2369	1529	-	-	70	78	0.25	0.0	-
<b>Average</b>	79.0	51.0	65.0	6.9	-	-	-	-	0.0
<b>Normal</b>	69.9	46.2	58.1	-	236	28	3.00	0.0	-

**Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).**

Max Temperature : 7am

Min Temperature : 7am

Precipitation : 7am

Snowfall : unknown

Snow Depth : 7am



## **Appendix F**

### **Sylvan Project Desktop Fish Entrainment and Impingement Study Report**

# DESKTOP FISH ENTRAINMENT AND IMPINGEMENT STUDY REPORT

SYLVAN HYDROELECTRIC PROJECT  
FERC No. 2454

Prepared for:

**Minnesota Power**

Prepared by:

**Kleinschmidt Associates**

January 2025

***Kleinschmidt***

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## 1.0 INTRODUCTION

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ALLETE, Inc, doing business as Minnesota Power (MP), is the Licensee, owner, and operator of the Sylvan Hydroelectric Project (FERC No. 2454) (Sylvan Project). The Sylvan Project is a 1.8-megawatt (MW) run-of-river facility located on the Crow Wing River in Cass, Crow Wing, and Morrison counties, Minnesota. The Federal Energy Regulatory Commission (FERC) license for the Sylvan Project expires on March 31, 2028. MP is using the Integrated Licensing Process (ILP) to relicense the Sylvan Project.

During study scoping, FERC requested a study to assess the potential for fish entrainment and impingement at the Sylvan Project, and the potential effects of entrainment and impingement on local fish communities. MP filed a Proposed Study Plan (PSP) on September 8, 2023, and held a study plan meeting on October 11, 2023. MP subsequently filed a Revised Study Plan (RSP) on January 9, 2024.

This study has been conducted to provide an order-of-magnitude estimate of fish entrainment and impingement at the Sylvan Project. Specifically, the goal of this study was to use a desktop analysis to evaluate the potential for fish entrainment and impingement at the powerhouse, estimate fish mortality due to entrainment and impingement, and assess the effect that entrainment and impingement may have on the local fish community. This methodology to develop a qualitative risk assessment of entrainment is commonly used to estimate order-of-magnitude levels of entrainment as part of the FERC licensing and relicensing processes.

The specific objectives of this Desktop Entrainment and Impingement Study are:

- Describe the physical characteristics of the Sylvan Project and document factors that could affect impingement, entrainment, and survival as they relate to project specific parameters;
- Determine target fish species or family groups, and describe factors that influence their vulnerability to impingement, entrainment, and turbine survival;
- Estimate fish impingement, entrainment, and associated mortality rates; and
- Describe potential effects to local fish communities associated with entrainment and impingement.

## 1.1 Sylvan Project Description

The Sylvan dam forms a 1,275-acre reservoir on the Crow Wing River. The Sylvan Project has three horizontal Francis turbines, each with an installed capacity of 600 kilowatt (kW), for a total installed capacity of 1,800 kW. The maximum hydraulic capacity of each turbine is approximately 470 cubic feet per second (cfs), for a maximum powerhouse hydraulic capacity of 1,410 cfs (Table 1-1). The Sylvan Project is operated in run-of-river mode, with outflows at the dam approximating inflow. Flow is discharged through the powerhouse under normal flow conditions. When the discharge capacity of the powerhouse is exceeded, flow is discharged through an approximately 240-foot-long spillway with four vertical slide gates and two inflatable rubber dams. There are no seasonal minimum flow requirements at the Sylvan Project.

**Table 1-1. Sylvan Project Specifications**

Sylvan Project Description	Specification
<b>General Information</b>	
Licensed Capacity	1,800 kW
Operation Type	Run-of-river
<b>Powerhouse</b>	
Turbine Generators	Three Horizontal Francis Turbines
Installed Capacity of Each Unit	600 kW
Revolutions Per Minute of Each Unit	150
Maximum Hydraulic Capacity of Each Unit	470 cfs
Minimum Hydraulic Capacity of Each Unit	85 cfs
Normal Effective Head	21 feet
Intake Width at Each Unit	14 feet 9 inches
Intake Height at Each Unit	17 feet
Trashrack Bar Thickness	0.25 inches
Trashrack Spacing	1.5 inches clear space, 1.75 inches centerline space

## 2.0 METHODS

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Fish impingement and entrainment may occur when fish enter into the intake area during periods of operation and become either impinged on the trashracks (dependent on bar rack spacing and fish size) or become entrained through the trashracks and turbines. As fish pass through a turbine, they can be subjected to pressure changes, shear stress, and mechanical injury. Each of these stresses can influence the survivability of fish passing through a turbine. Fish entrainment (rate and mortality) was historically evaluated through empirical onsite investigation. In this analysis, the results of prior entrainment and turbine mortality field studies were used to approximate the potential impacts to fish entrained at the Sylvan Project.

The primary inputs for this desktop analysis were developed through a series of evaluations covering the following steps:

1. Develop a fish entrainment and turbine mortality database that can be applied to the Sylvan Project.
2. Estimate fish entrainment rates, defined as number of fish/volume of water entrained.
3. Characterize the species composition of potential fish entrainment.
4. Apply physical or biological filters that may influence entrainment.
5. Estimate impingement mortality for fish excluded from entrainment estimates.
6. Estimate the total annual entrainment for the Sylvan Project based on a range of low, normal, and high flow years.
7. Estimate potential turbine mortality for fish entrainment.

### 2.1 Entrainment Database and Entrainment Rates

Over sixty site-specific studies of resident fish entrainment at hydroelectric Projects in the United States have been reported to date, which provide order-of-magnitude estimates of annual fish entrainment (EPRI 1997, FERC 1995). Descriptive information was gathered from available entrainment studies, which include:

- Location: geographic proximity to the Sylvan Project
- Project size: discharge capacity and power production
- Project head: head height less than 50 feet

- Mode of operation: e.g., run-of-river, etc.
- Biological factors: similarity of fish species composition

Using these criteria, a list of surrogate studies was developed. To ensure a robust dataset, nine source studies were included in the development of a Project specific entrainment rate. The reported annual entrainment rates for each of the sites were averaged to provide an annual entrainment rate for the Sylvan Project. Annual entrainment rates were used due to differences in how monthly entrainment rates were calculated in surrogate studies. The annual entrainment rates for projects in Electric Power Research Institute (EPRI) entrainment study databases were reported in fish per hour using 100% of the plant capacity. These hourly entrainment rates were converted to fish per water volume discharged (million cubic feet [MCF]). Entrainment rates expressed as fish per volume of water allow for the comparison of entrainment at different sites despite varying characteristics, such as plant hydraulic capacity. Once an annual entrainment rate was established for each site, the rates were averaged to produce an estimated annual entrainment rate for the Sylvan Project.

## **2.2 Estimation of Total Annual Entrainment**

Annual entrainment estimates were developed for the Sylvan Project by multiplying the annual entrainment rate by the estimated monthly generation flows. Due to differences in the methods used to calculate monthly entrainment rates for sites within the EPRI databases, annual entrainment (fish per MCF) was applied across all months. Monthly generation flow estimates were derived using mean monthly values from USGS Gage No. 05247500, located on the Crow Wing River near Pillager, MN, for the full calendar years of 1993 through 2023. Mean daily flows were also adjusted to account for the limitations of the powerhouse hydraulic capacity. Flows were limited to the maximum powerhouse flow of 1,410 cfs. Flows in excess of this would pass as spill and were not included in the calculation of generation flows. After calculating the average daily flows that will pass through the powerhouse, monthly flow estimates were calculated by multiplying the average daily powerhouse flows by the number of days in the month. The average monthly flow in cfs was then converted to the volume of water expected to pass through the powerhouse in MCF. The monthly MCF values were summed to calculate the annual volume of water that is expected to be passed through the Sylvan Project powerhouse. This approach is conservative and assumes that the Project operates at maximum capacity with no turbine outages during the year, which is an operationally unlikely scenario.

Additionally, potential maximum and minimum entrainment estimates were calculated using the monthly minimum and maximum daily average flows that occurred during 1993-2023.

### **2.3 Species Composition**

Site-specific data from the Minnesota Department of Natural Resources (Minnesota DNR) trap netting assessments were used to characterize the Sylvan Lake fish assemblage. Primary management goals for the reservoir include management of bluegill, northern pike, and black crappie. Additional management species include walleye and largemouth bass, although the reservoir has historically supported a low walleye population. Fisheries data collected via trap netting in 2014 and 2024 were compiled to assess species composition for the reservoir (Minnesota DNR 2014, Minnesota DNR 2024). A total of 12  $\frac{3}{4}$ -inch mesh trap net sets were conducted in June 2014, and a total of 28 trap net sets were conducted during April-June 2024. Trap nets with  $\frac{3}{4}$ -inch mesh may not be expected to effectively collect smaller species or individuals, including cyprinids or young-of-year fish, or some species that are more susceptible to capture with other methods, but can provide a useful index of the general reservoir fish assemblage. The empirical source study data used to derive the entrainment rates, however, included all species and size classes collected during their respective studies.

Species composition was similar between survey years 2014 and 2024, and species compositions from both survey years were combined to estimate the overall relative abundance of fish that may be potentially entrained at the Sylvan Project. A total of 14 fish species or family groups were documented. Bluegill were the most abundant fish species during both survey years, comprising over 50% of the total catch. Fish collected during 2014 and 2024 Minnesota DNR trap net surveys are described in Table 2-1.

**Table 2-1. Fish Species Collected during Minnesota DNR Trap Netting Surveys**

<b>Species</b>	<b>2014 Total</b>	<b>2024 Total</b>	<b>Minimum Length (in.)</b>	<b>Maximum Length (in.)</b>	<b>Combined Relative Abundance (%)</b>
Black crappie	8	90	3.7	11.3	8.3%
Bluegill	238	454	3.2	9.0	58.4%
Bowfin	15	21	19.5	27.1	3.0%
Bullhead spp.	5	18	11.8	13.9	1.9%
Common carp	47	15	17.8	33.9	5.2%
Golden shiner	0	1	5.7	5.7	0.1%
Largemouth bass	3	23	7.2	19.9	2.2%
Northern pike	9	50	8.6	32.6	5.0%
Pumpkinseed/hybrids	15	63	3.5	8.4	6.6%
Redhorse spp.	4	9	18.9	24.6	1.1%
Rock bass	1	56	3.8	10.5	4.8%
Walleye	2	1	6.5	21.5	0.3%
White sucker	15	3	11.6	21.5	1.5%
Yellow perch	4	15	4.9	13.2	1.6%
<b>Total</b>	<b>366</b>	<b>819</b>			<b>100%</b>

Source: Minnesota DNR 2014, Minnesota DNR 2024

## 2.4 Entrainment Screening

Physical and biological filters refer to the physical layout of the Project intakes, or biological factors that would influence entrainment. Examples of this include trash rack spacing that prevents fish from entering the intakes, or intake velocities that are lower than fish sustained swim speeds.

The first potential entrainment filter analyzed was the expected approach and through velocity of water at the Sylvan Project intake. This entrainment filter was calculated using Sylvan Project specific characteristics, including trash rack spacing, intake area, and maximum flow capacity of the Sylvan Project’s turbines (Table 2-2). Calculated water velocity was compared to the swimming speeds of potentially entrained fish. Fish swimming speeds were estimated using methods put forth in a United States Fish and Wildlife Service (USFWS) bulletin (USFWS 1989). The bulletin defines a conservative estimate of a fish’s sustained swimming speed as three times its body length. The

expected swimming speed of fish at the Sylvan Project was calculated using the following equation:

$$\text{swimming speed (ft/s)} = \text{fish length (ft)} \times 3 \text{ body lengths per second (ft/s)}$$

This information was used to exclude fish that can escape intake flows from the entrainment estimate and provides a more conservative estimate of potential entrainment than use of the faster burst swim speeds. Inclusion of smaller size classes of fish with slower swim speeds mirrors results of empirical in-field studies, where juveniles and smaller adult fish comprise much of the documented entrainment composition, with relatively few larger adults present (EPRI 1997, FERC 1995).

**Table 2-2. Sylvan Project Intake and Trashrack Dimensions at Each Unit**

Intake and Trashrack Dimension Data	
Intake Height (ft)	17
Intake Width (ft)	15
Intake Area (ft <sup>2</sup> )	255
Trash Rack Clear Bar Spacing (in)	1.5
Track Rack Centerline Bar Spacing (in)	1.75
Trash Rack Bar Thickness (in)	0.25
Bar Percentage	14%
Bar Area (ft <sup>2</sup> )	36.43
Free Area (ft <sup>2</sup> )	218.6
<b>Approach Velocity (fps)</b>	<b>1.84</b>
<b>Through Velocity (fps)</b>	<b>2.15</b>

## 2.5 Fish Impingement

Impingement can occur if a fish is too wide to travel through the trash racks and cannot escape intake inflow. Widths of fish potentially entrained at the Sylvan Project were estimated using interorbital width. Interorbital width is the distance between eyes as measured across the head and is roughly equivalent to skull width. The skull is the least compressible part of the fish body and provides a conservative index of what size fish the

trashrack may exclude. Interorbital widths were calculated using the relationships of a fish's total length, standard length, and interorbital width as defined in Smith (1985).

## 2.6 Turbine Mortality Rates and Estimation of Fish Mortality

Mortality estimates were calculated using methods defined in Franke et al. (1997). Franke et al. developed equations for calculating the probability that a turbine blade would strike an entrained fish based on Project specific turbine parameters. Table 2-3 describes the specific parameters for the Sylvan Project, assuming the plant is operating at maximum hydraulic capacity. The equation used to calculate the blade strike probability for a Francis unit is:

$$P = \lambda * (N * L / D) * (\sin(\alpha * B / D_1) / 2Q\omega^d) + (\cos(\alpha) / \pi)$$

Where:

- P = Probability of strike
- $\lambda$  = Blade strike correlation factor
- N = Number of buckets
- L = Fish length
- D = Diameter of runner
- B = Runner height at inlet
- $D_1$  = Diameter of runner at inlet
- $Q\omega^d$  = Discharge coefficient =  $(Q / \omega D^3)$ , where Q = max flow and  $\omega$  = rotational speed
- $\alpha$  = Angle to tangential of absolute flow upstream of runner

$$\text{Survival (S)} = 1 - P$$

Mortality rates for each length class were calculated using the longest fish in a length class. For example, all fish within the 0–4-inch length class were assigned the mortality rate calculated for an 4-inch fish. After calculating the mortality rate for each length class, mortality rates were applied to the estimated number of fish entrained annually for each length class. This provided a conservative estimate of annual entrainment mortality.

A correlation factor was utilized to adjust the predictive model results to correspond with documented empirical data. The correlation factor was originally introduced by Von Raben (Bell 1981) to account for the fact that the contact of a fish with a turbine component does not always result in injury or mortality (Bell 1981, Cada 1998). Therefore, Von Raben introduced the correlation factor to adjust the predicted turbine strike results to more closely match empirical results. The correlation factor is necessary because not all strikes lead to death, and not all mortality is due to blade strike. This factor also extends the applicability of these predictive equations to all injury mechanisms related to the variable parameters. Franke et al. (1997) refined the Von Raben model to consider the effect of tangential projection of the fish length on blade strike probability, as a large percentage of entrainment mortality is caused by fish strikes from a turbine blade or some other turbine component. As stated in Franke et al. (1997) *"such mechanisms could include mechanical mechanisms such as leading-edge strike and gap grinding as well as fluid induced mechanisms related to flow through gaps or other flow phenomena associated with blades."* Based on a substantial number of test results obtained from studies conducted with salmonids on the west coast, Franke et al. (1997) recommends a correlation factor ranging from 0.1 to 0.2. Use of a higher correlation factor results in a lower survival rate. For this assessment, blade strike analyses were run with correlation factors of 0.10, 0.15, and 0.20.

**Table 2-3. Sylvan Project Specifications of Three Francis Turbines**

<b>Turbine Characteristics</b>	<b>Generation</b>
Turbine Type:	Francis
RPM:	150
Normal Effective Head (ft):	21
Maximum Hydraulic Capacity (cfs)	470

## 3.0 RESULTS

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### 3.1 Entrainment Database and Entrainment Rates

Using the methods described in Section 2.1, the database of entrainment studies was narrowed to nine sites that are comparable (surrogate) to the Sylvan Project. Database sites included in this analysis have similar project characteristics, are located at latitudes similar to the Sylvan Project, and/or have similar fish species compositions. The reference sites were located in Michigan and Wisconsin. Database sites used for this analysis were also used for the Pillager Entrainment and Impingement Study, due to the similar characteristics (size, operation, location within the river basin) between the two Projects. Reference sites included in the database were characterized by the presence of warm water and cool water (transitional) species. Numerous species or family groups that were documented by Minnesota DNR trap netting surveys also comprise a large percentage of the fish assemblages documented at reference sites represented in the database.

The Sylvan Project entrainment rate was estimated by averaging the results of studies at reference sites identified in the database. If multiple entrainment studies were completed at a reference site, the most appropriate and/or complete study was used in this analysis. Table 3-1 contains information on the sites that make up the Sylvan Project database and the calculated entrainment rate for the Sylvan Project.

**Table 3-1. Sylvan Project Entrainment Database**

Reference Site	Project Size (MW)	Hydraulic Capacity (cfs)	Head (ft)	Location	Operating Mode	Predominant Fish Species	Ent. Rate (fish/MCF)
Shawano	0.7	850	16	Wisconsin	Run-of-river	bluegill, black crappie, pumpkinseed	1.50
Thornapple	1.6	1,400	11	Wisconsin	Run-of-river	black crappie walleye, yellow perch	1.39
Brule	5.3	1,377	32	Wisconsin	Run-of-river	yellow perch, minnow species	0.97
Mio	5.0	4,950	21	Michigan	Run-of-river	bluegill, smallmouth bass	0.77
Alcona	8.0	8,000	43	Michigan	Peaking	bluegill, white sucker, yellow perch	0.36
Loud	4.0	4,444	24	Michigan	Peaking	bluegill, black crappie, rock bass, walleye	1.16
Cooke	9.0	3,600	17	Michigan	Peaking	black crappie, yellow perch	1.96
Foote	9.0	4,050	25	Michigan	Peaking	smallmouth bass, walleye, white sucker	1.21
Rogers	8.8	2,400	40	Michigan	Run-of-river	bass species, walleye, yellow perch	0.74
<b>Sylvan</b>	1.8	1,410	21	Minnesota	Run-of-river	bluegill, black crappie	<b>1.12</b>

### 3.2 Entrainment Estimate

Table 3-2 through Table 3-4 provide the calculated annual flows through the Sylvan Project powerhouse for a low water year, an average water year (i.e., average flows observed during 1993-2023), and a high-water year, and the estimated monthly total entrainment rates for each of these flow conditions. The monthly flows were multiplied by the annual entrainment rate calculated for the Sylvan Project (estimated entrainment rate of 1.12 fish/MCF) to estimate annual entrainment. This calculation estimated annual entrainment at 14,722 fish per year during a low water year, 45,566 fish per year during an average water year, and 49,802 fish per year during a high water year, prior to the application of filters that influence entrainment (Table 3-2 to Table 3-4). Powerhouse monthly flow rates assume continuous operation up to maximum capacity of 1,410 cfs.

**Table 3-2. Sylvan Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - Low Flow**

Month	Monthly Flow (MCF)	Powerhouse Monthly Flow (MCF)	Estimated Fish Entrained (low)
January	410	410	1,230
February	399	399	1,081
March	445	445	1,335
April	971	971	2,819
May	743	743	2,229
June	483	483	1,402
July	307	307	921
August	167	167	501
September	233	233	676
October	358	358	1,074
November	191	191	554
December	300	300	900
<b>Annual</b>			<b>14,722</b>

**Table 3-3. Sylvan Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - Average Flow**

Month	Monthly Flow (MCF)	Powerhouse Monthly Flow (MCF)	Estimated Fish Entrained (average)
January	945	945	2,835
February	909	909	2,463
March	1778	1410	4,230
April	3751	1,410	4,093
May	3125	1,410	4,230
June	2523	1410	4,093
July	1872	1410	4,230
August	1311	1311	3,933
September	1253	1253	3,638
October	1581	1410	4,230
November	1499	1410	4,093
December	1166	1166	3,498
<b>Annual</b>			<b>45,566</b>

**Table 3-4. Sylvan Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - High Flow**

Month	Monthly Flow (MCF)	Powerhouse Monthly Flow (MCF)	Estimated Fish Entrained (high)
January	2150	1410	4,230
February	3940	1410	3,820
March	13200	1410	4,230
April	16900	1410	4,093
May	9760	1410	4,230
June	10300	1410	4,093
July	6960	1410	4,230
August	4090	1410	4,230
September	4280	1410	4,093
October	6770	1410	4,230
November	4420	1410	4,093
December	4080	1410	4,230
<b>Annual</b>			<b>49,802</b>

### **3.3 Species and Length Class Composition**

Species and length class composition were calculated using the results of Minnesota DNR trap netting surveys (Minnesota DNR 2014, Minnesota DNR 2024). Bluegill comprised over half of the fish assemblage at 58%. A majority of documented fish were in the 0–8-inch length classes (Table 3-5). Species and length composition percentages were applied to the total annual entrainment total to estimate entrainment by species and length class.

**Table 3-5. Length Class Composition Percentages by Species**

<b>Length Class (in.)</b>	<b>Black Crappie</b>	<b>Bluegill</b>	<b>Bowfin</b>	<b>Bullhead spp.</b>	<b>Common Carp</b>	<b>Largemouth Bass</b>	<b>Golden Shiner</b>	<b>Northern Pike</b>	<b>Pumpkinseed /Hybrid</b>	<b>Redhorse spp.</b>	<b>Rock Bass</b>	<b>Walleye</b>	<b>White Sucker</b>	<b>Yellow Perch</b>
0.0-5.0	3%	11%	0%	0%	0%	4%	0%	0%	26%	0%	19%	0%	0.0%	7%
5.1-8.0	25%	83%	0%	0%	0%	17%	100%	0%	73%	0%	55%	33%	0.0%	67%
>8.0	72%	6%	100%	100%	100%	78%	0%	100%	1%	100%	26%	67%	100.0%	27%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

### 3.4 Entrainment Filters

The calculated approach velocity (1.84 feet per second [fps]) and through velocity (2.15 fps) at the maximum hydraulic capacity were compared to the calculated swim speed of fish for each length class. Fish swim speeds were calculated using an assumed minimum sustained swim speed of three body lengths per second (Table 3-6) (USFWS 1989). Sustained swim speed calculations show that fish greater than 8 inches would likely be able to escape flow at the Sylvan Project intake and avoid entrainment; therefore, fish larger than 8 inches were excluded from the entrainment estimate. Entrainment totals after screening fish larger than 8 inches for low, average, and high flow scenarios are included in Table 3-7 to Table 3-9. Filtered annual entrainment rates range from 10,162 fish per year in the low flow scenario to 34,380 fish per year in the high flow scenario. Similar species were pooled into family groups, including sucker species (greater redhorse, silver redhorse, shorthead redhorse, and white sucker) and bullhead species (yellow bullhead and brown bullhead).

**Table 3-6. Fish Swimming Speed by Length**

<b>Fish Length (in.)</b>	<b>Sustained Swim Speed (ft/s)</b>
1.0	0.3
2.0	0.5
3.0	0.8
4.0	1.0
5.0	1.3
6.0	1.5
7.0	1.8
8.0	2.0
9.0	2.3
10.0	2.5
11.0	2.8
12.0	3.0
13.0	3.3
14.0	3.5

**Table 3-7. Filtered Annual Entrainment Results by Species - Low Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	339
Bowfin	0
Bullhead spp.	0
Common carp	0
Largemouth bass	70
Northern pike	0
Sucker spp.	0
Sunfish spp.	9,556
Walleye	12
Golden shiner	12
Yellow perch	173
<b>Total</b>	<b>10,162</b>

**Table 3-8. Filtered Annual Entrainment Results by Species - Average Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	1,049
Bowfin	0
Bullhead spp.	0
Common carp	0
Largemouth bass	217
Northern pike	0
Sucker spp.	0
Sunfish spp.	29,576
Walleye	38
Golden shiner	38
Yellow perch	536
<b>Total</b>	<b>31,454</b>

**Table 3-9. Filtered Annual Entrainment Results by Species - High Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	1,146
Bowfin	0
Bullhead spp.	0
Common carp	0
Largemouth bass	238
Northern pike	0
Sucker spp.	0
Sunfish spp.	32,326
Walleye	42
Golden shiner	42
Yellow perch	586
<b>Total</b>	<b>34,380</b>

### **3.5 Fish Impingement**

The largest individuals for 7 of the 13 of species or family groups in the dataset would be capable of fitting through the Sylvan Project’s 1.5 in trashrack spacing. Species or family groups with individuals too large to fit through the trashrack spacing include the largest documented white sucker, common carp, brown bullhead, silver redhorse, northern pike, and bowfin (Table 3-10). Fish in these larger size classes would be expected to have sustained swim speeds well above the 1.84 fps approach velocity and 2.15 fps through velocity, and would therefore not be susceptible to impingement. All fish with sustained swim speeds at or below the through velocity of 2.15 fps have interorbital widths well below the 1.5 in trashrack spacing, and would not be susceptible to impingement on the Sylvan trashracks.

**Table 3-10. Calculated Interorbital Widths for Fish Species Collected at the Sylvan Project**

<b>Species</b>	<b>Total Length of Largest Individual from Dataset (in.)</b>	<b>Interorbital Width of Largest Individual from Dataset (in.)*</b>
Bluegill	9.5	0.5
Largemouth bass	20	1.3
Rock bass	10.5	0.9
White sucker	22	2.6
Black crappie	11.5	0.6
Common carp	34	3.3
White shiner**	6	0.4
Brown bullhead***	14	1.8
Silver redhorse****	20	1.8
Northern pike	33	1.8
Walleye	18	0.9
Yellow perch	10.5	0.7
Bowfin	28	2.4

\*Interorbital widths calculated from proportional measurements listed in Smith (1985).

\*\*Surrogate for golden shiner

\*\*\*Surrogate for yellow bullhead

\*\*\*\*Surrogate for shorthead redhorse and greater redhorse

### **3.6 Mortality Estimate**

Mortality rates were applied to the dataset after screening fish capable of escaping powerhouse inflow. The mortality rate calculated for 5-inch fish was applied to all fish in the 0–5-inch length class with correlation factors of 0.10, 0.15, and 0.20 (Table 3-11). The mortality rate calculated for 8-inch fish was applied to all fish in the 5.1-8-inch length class. Total annual entrainment mortality for the low flow scenario ranged from 1,572 fish to 3,142 fish (Table 3-12). Total annual entrainment mortality for the average flow scenario ranged from 4,863 fish to 9,725 fish (Table 3-13). Total annual mortality for the high flow scenario ranged from 5,316 fish to 10,632 fish (Table 3-14).

**Table 3-11. Entrainment Mortality Rates**

Length Class	Correlation Factor		
	0.10	0.15	0.20
0-5-inch	10.2%	15.3%	20.3%
5.1-8-inch	16.3%	24.4%	32.6%

**Table 3-12. Total Annual Entrainment Mortality - Low Flow**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	53	79	106
Bowfin	0	0	0
Bullhead spp.	0	0	0
Common carp	0	0	0
Largemouth bass	11	16	21
Northern pike	0	0	0
Sucker spp.	0	0	0
Sunfish spp.	1,477	2,215	2,953
Walleye	2	3	4
Golden shiner	2	3	4
Yellow perch	27	42	54
<b>Total</b>	<b>1,572</b>	<b>2,358</b>	<b>3,142</b>

**Table 3-13. Total Annual Entrainment Mortality - Average Flow**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	164	245	327
Bowfin	0	0	0
Bullhead spp.	0	0	0
Common carp	0	0	0
Largemouth bass	33	49	65
Northern pike	0	0	0
Sucker spp.	0	0	0
Sunfish spp.	4,570	6,855	9,140
Walleye	6	9	12
Golden shiner	6	9	12
Yellow perch	84	129	169
<b>Total</b>	<b>4,863</b>	<b>7,296</b>	<b>9,725</b>

**Table 3-14. Total Annual Entrainment Mortality - High Flow**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	179	268	358
Bowfin	0	0	0
Bullhead spp.	0	0	0
Common carp	0	0	0
Largemouth bass	36	54	72
Northern pike	0	0	0
Sucker spp.	0	0	0
Sunfish spp.	4,995	7,492	9,990
Walleye	7	10	14
Golden shiner	7	10	14
Yellow perch	92	141	184
<b>Total</b>	<b>5,316</b>	<b>7,975</b>	<b>10,632</b>

## 4.0 DISCUSSION

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A comparison of fish swim speeds and body sizes with project intake velocities and trash rack spacing indicates low potential for impingement, as intake velocities are lower than swimming speeds for fish species and size classes that are large enough to be impinged. It is likely that fish entering the project intake would either avoid intake flows or be entrained through the trashracks. Therefore, impingement is unlikely to be a project impact.

The estimates of annual entrainment and turbine mortality presented in this report were developed based on the best-available data and are intended to provide an order-of-magnitude assessment of potential fish entrainment and turbine mortality at the Sylvan Project. The calculations used several conservative assumptions. The method used to determine powerhouse operations was based on ideal conditions and assumes that the Sylvan Project is always available to operate at maximum capacity based on water availability. It does not account for planned or unplanned outages when the hydraulic capacity of the facility is reduced. Reduced hydraulic capacity would reduce the entrainment rate and subsequently the entrainment mortality estimates. Additionally, the survival estimate is influenced by using the turbine mortality rate estimates for the largest fish in the entrained size classes, and applying them to all fish. This results in applying a higher mortality estimate for smaller fish within the group than would be expected.

The fish collection data and entrainment estimate are largely comprised of bluegill (>50% of individuals). Bluegill are highly fecund and can produce large numbers of offspring per individual female each season (Jenkins and Burkhead 1993). The smallest individuals of these species (e.g., young-of-year) would likely have relatively high entrainment survival rates. Conversely, the smallest size groups that occur soon after hatching have the highest natural mortality rates (typically 90% or greater) associated with ecological and environmental factors (Jenkins and Burkhead 1993). Natural mortality in the population would be substantially higher than the estimated entrainment mortality of the Sylvan Project. Only a very small proportion of the population is subject to entrainment impacts, and for those that are, the entrainment mortality rate for young-of-year sized bluegill (i.e. 0-2 inches) is expected to be less than 5%.

Annual filtered entrainment estimates across flow scenarios ranged from approximately 10,000 fish to approximately 34,000 fish. A high percentage of the species composition

for this study includes small centrarchid (sunfish) species (e.g., bluegill). Centrarchids less than six inches in total length were also the most abundant size class and family group documented during empirical entrainment studies at multiple projects in the Midwest (EPRI 1997). Annual mortality estimates ranged from approximately 1,600 to 3,100 fish killed in the low flow scenario to 5,300 to 10,600 fish killed in the high flow scenario.

Additional passage related impacts are possible through the Sylvan Project spillway during periods of high flows, or when the powerhouse is not fully operational. During a low water year, monthly average flow rates remain below the powerhouse capacity of 1,410 cfs for the duration of all months. In a high-water year, flows in excess of 1,410 cfs are exceeded approximately 45% of the time. Heisey et al. (1992) examined survival rates of juvenile salmonids passing over dam spillways in the Columbia and Snake River systems, finding survival rates ranging from 88% to 100%. Survival rates varied based on spill volume, with higher spill volumes associated with higher fish survival. Fish passing via spill is most likely to occur during high flow periods when flows in excess of 1,410 cfs are regularly exceeded, and spillway passage would not be expected to cause notable mortality rates for fish at the Sylvan Project.

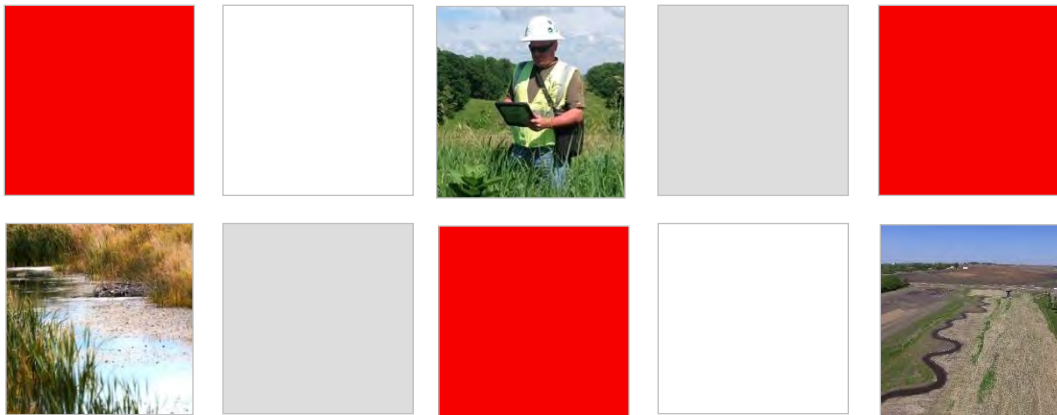
## 5.0 REFERENCES

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- Bell, M.C. 1981. Updated Compendium on the Success of Passage of Small Fish through Turbines. Tech. rep., U.S. Army Corps of Engineers.
- Cada, G.F. 1998. Better Science Supports Fish-Friendly Turbine Designs. *Hydro Review* 17(6):52-61.
- Electric Power Research Institute (EPRI). 1997. Turbine Entrainment and Survival Database-Field Tests. Prepared by Alden Research Laboratories, Inc. TR-108630.
- Federal Energy Regulatory Commission (FERC). 1995. Preliminary Assessment of Fish Entrainment at Hydropower Projects. Volumes 1 and 2. Office of Hydropower Licensing, FERC. Washington, DC.
- Franke, G.F., D.R. Webb, and R.K. Fisher. 1997. Development of Environmentally Advanced Hydropower Turbine System Design Concepts. Tech. rep., Lockheed Idaho Technologies, Co.
- Heisey, P.G., D. Mathur and T. Rineer. 1992. A Reliable Tag-Recapture Technique for Estimating Turbine Passage Survival: Application to Young-of-the-Year American Shad (*Alosa sapidissima*). *Canadian Journal of Fisheries and Aquatic Sciences*. 49:1826-1834.
- Jenkins, R.E. and N.M. Burkhead. 1993. *Freshwater Fishes of Virginia*. American Fisheries Society, Bethesda, Maryland.
- Minnesota Department of Natural Resources (Minnesota DNR). 2014. Lake Survey Report-Sylvan. DOW Number 49-0036-00.
- Minnesota Department of Natural Resources (Minnesota DNR). 2014. Lake Survey Report-Sylvan. Preliminary Draft.
- Smith, C.L. 1985. *The Inland Fishes of New York State*. New York State Department of Environmental Conservation. Albany, New York. 522 pp.
- United States Fish and Wildlife Service (USFWS). 1989. Water Velocity Standards at Power Plant Intakes: Traditional and Alternative Rationales. Information Bulletin No. 89-61.

## **Appendix G**

### **Sylvan Project Recreation Use and Facility Inventory Study Report**



PREPARED FOR

**Minnesota Power  
Sylvan Hydroelectric Project  
FERC Project No. P-2663  
Cass, Crow Wing, and Morrison Counties, MN**

**Recreation Use and Facility  
Inventory Study**

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February 2025



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## **LIST OF APPENDICES**

- Appendix A - Site Locations and Aerial Overviews
- Appendix B - Sample Data Collection Forms
- Appendix C - Survey Data Forms and Photos

## 1.0 INTRODUCTION

The Sylvan Hydroelectric Project (Project) is owned and operated by Minnesota Power (MP), an ALLETE Company, and is licensed by the Federal Energy Regulatory Commission (FERC). The Project’s FERC License (P-2663) was issued on October 29, 1993, and the current operating license will expire on March 31, 2028. In accordance with FERC’s regulations at 18 Code of Federal Regulations (CFR) §16.9(b), MP will file an application for a new license with FERC no later than March 31, 2026. As part of the FERC relicensing, Merjent, Inc. (Merjent) was retained by MP to perform the recreation use and facility inventory study.

### 1.1 PROJECT DESCRIPTION

The Sylvan Hydroelectric Project is a 1.80 Megawatt (MW), run-of-river hydroelectric generation facility located on the Crow Wing River in Cass, Crow Wing, and Morrison Counties, Minnesota. Recreation sites have been identified at four locations within the Project boundary and include: Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder’s Landing, and Fisherman’s Bridge Boat Launch and Fishing Area. Each of the sites can be accessed any time of day and have no specific hours of operation. With the exception of the Sylvan Dam Boat Access and Fishing Area and the Fisherman’s Bridge Boat Launch and Fishing Area sites, in which maintenance responsibilities are shared between MP and the Minnesota Department of Natural Resources (MnDNR), the owner / operator of each site performs all maintenance activities. At each site except for Wilder’s Landing, MP inspects signs, mows, and collects garbage three times each summer. At all sites the MnDNR is typically responsible for road and boat launch repairs.

Site locations and plan views of each recreation site, including the Project’s FERC boundary, are included in Appendix A. An overview of the recreation sites, their owners, and locations with respect to the dam are included in Table 1-1 below. Further details are provided in each site’s representative subsection of Section 3.

<b>Recreation Site Area</b>	<b>Owner/Operator</b>	<b>Description</b>
Sylvan Dam Boat Access and Fishing Area	MP & MnDNR <sup>(1)</sup>	Located directly downstream of the Sylvan Dam on the Crow Wing River. Parking for approximately 20 vehicles (10 for anglers, 10 for boaters), a shorefishing area, and a concrete boat ramp.
Sylvan Canoe Portage	MP	Located on the east side of the Sylvan Dam with an approximately 200-yard-long canoe portage trail around the dam. Unimproved launch upstream of the dam and utilizing the concrete boat ramp downstream of the dam.
Wilder’s Landing	MnDNR	Located approximately 2 miles upstream of the Sylvan Dam, at the northwest end of the Crow Wing River. Parking for approximately 15 vehicles and a concrete boat ramp.
Fisherman’s Bridge Boat Launch and Fishing Area	MP & MnDNR <sup>(1)</sup>	Located approximately 0.5 miles upstream of the Sylvan Dam, at the north end of Sylvan Reservoir. Designated shorefishing area with parking for approximately five vehicles on the east side of river. Two lane concrete boat launch and dock with parking for approximately 15 vehicles on the west side of river.

Notes: <sup>(1)</sup> MP owns the land and leases the site to MnDNR, who operates it.

## **1.2 OBJECTIVE**

This inventory was conducted to evaluate recreation facilities and use to inform the FERC relicensing process for the Project. The recreation study was conducted in accordance with the Revised Study Plan for the relicensing at Little Falls, Sylvan, and Pillager Hydroelectric Project, submitted by MP and dated January 9, 2024 (Kleinschmidt, 2024). The following tasks were performed for the recreation study:

- Perform an inventory and condition assessment of the recreation facilities and associated amenities at the FERC-approved recreation sites, including identifying erosion that may exist due to recreation use.
- Identify who owns, operates, and maintains each site and describe each recreation site and facility in relation to its associated Project boundary for the hydroelectric facility.
- Conduct user surveys during the recreation season to determine the adequacy of the sites and whether modifications to the sites would be needed to meet current or future recreation needs.
- Determine the current and projected capacity at each recreation site and facility for the hydroelectric facility.

This report has been prepared to document the methodologies, findings, and conclusions from the recreation use and facility inventory study performed during the 2024 recreation season by Merjent on behalf of MP.

## 2.0 METHODOLOGY

Data for the recreation use and facility inventory study were collected by Merjent staff over a series of site visits to each recreation site between the months of May and August 2024. A schedule for the site visits was developed to meet the requirements specified by MP and identified in the relicensing Revised Study Plan (Kleinschmidt, 2024). The dates and times of the site visits were randomly selected using built-in randomization functions in Microsoft Excel, given the study plan parameters and Merjent field staff availability. In addition, the order in which the recreation sites were visited was randomly varied during each survey trip. Site visits were performed on the following dates:

Dates <sup>(1)</sup>	Sites Visited <sup>(2)</sup>	Required Occasion <sup>(3)</sup>
May 25, 2024 (Sat)	Alvah's Landing, Pillager Dam Public Boat Launch, Pillager Dam Public Canoe Portage and Shorefishing Access	Holiday weekend days (Memorial Day)
May 26, 2024 (Sun)	*Sylvan Dam Boat Access and Fishing Area, *Sylvan Canoe Portage, *Wilder's Landing, *Fisherman's Bridge Boat Launch and Fishing Area	Holiday weekend days (Memorial Day)
June 11, 2024 (Tue)	*Sylvan Dam Boat Access and Fishing Area, *Sylvan Canoe Portage, *Wilder's Landing, *Fisherman's Bridge Boat Launch and Fishing Area, Pillager Dam Public Boat Launch	June weekdays
June 12, 2024 (Wed)	Alvah's Landing, Pillager Dam Public Canoe Portage and Shorefishing Access	June weekdays
June 22, 2024 (Sat)	*Sylvan Dam Boat Access and Fishing Area, *Sylvan Canoe Portage, *Wilder's Landing, Pillager Dam Public Boat Launch	June weekend days
June 23, 2024 (Sun)	Alvah's Landing, Pillager Dam Public Canoe Portage and Shorefishing Access, *Fisherman's Bridge Boat Launch and Fishing Area	June weekend days
June 28, 2024 (Fri)	Crow Wing River Canoe Campsite	June monthly canoe campsite visit
July 4, 2024 (Thu)	*Sylvan Dam Boat Access and Fishing Area, *Sylvan Canoe Portage, *Wilder's Landing, *Fisherman's Bridge Boat Launch and Fishing Area	Holiday weekend days (Fourth of July)
July 5, 2024 (Fri)	Alvah's Landing, Pillager Dam Public Boat Launch, Pillager Dam Public Canoe Portage and Shorefishing Access	Holiday weekend days (Fourth of July)
July 24, 2024 (Wed)	Alvah's Landing, Pillager Dam Public Boat Launch, Pillager Dam Public Canoe Portage and Shorefishing Access	July weekdays
July 25, 2024 (Thu)	*Sylvan Dam Boat Access and Fishing Area, *Sylvan Canoe Portage, *Wilder's Landing, *Fisherman's Bridge Boat Launch and Fishing Area	July weekdays
July 31, 2024 (Wed)	Crow Wing River Canoe Campsite	July monthly canoe campsite visit
Aug. 13, 2024 (Tue)	*Sylvan Dam Boat Access and Fishing Area, *Sylvan Canoe Portage, *Wilder's Landing, *Fisherman's Bridge Boat Launch and Fishing Area, Alvah's Landing	August or September weekdays
Aug. 14, 2024 (Wed)	Pillager Dam Public Boat Launch, Pillager Dam Public Canoe Portage and Shorefishing Access	August or September weekdays
Aug. 27, 2024 (Tue)	Crow Wing River Canoe Campsite	August monthly canoe campsite visit

<b>TABLE 2-1</b>		
<b>Recreation Use Survey Schedule</b>		
<b>Dates <sup>(1)</sup></b>	<b>Sites Visited <sup>(2)</sup></b>	<b>Required Occasion <sup>(3)</sup></b>
Aug. 31, 2024 (Sat)	*Sylvan Dam Boat Access and Fishing Area, *Sylvan Canoe Portage, *Wilder’s Landing, *Fisherman’s Bridge Boat Launch and Fishing Area, Pillager Dam Public Boat Launch	Holiday weekend days (Labor Day)
Sept. 1, 2024 (Sun)	Alvah’s Landing, Pillager Dam Public Canoe Portage and Shorefishing Access	Holiday weekend days (Labor Day)
Oct. 2, 2024 (Wed)	Crow Wing River Canoe Campsite	Demobilize canoe campsite

Notes: <sup>(1)</sup> Recreation sites were visited over two days in conjunction with the Pillager recreation survey sites.  
<sup>(2)</sup> Sites are listed for both Pillager and Sylvan Projects. Sylvan sites are identified with “\*”.  
<sup>(3)</sup> Parameters for weekday, weekend, or holiday dates as specified in the revised study work plan.

The recreation study included two survey activities: 1) a Recreation Facility Inventory and Condition Assessment and 2) a Recreation Use Assessment. Additional discussion of the methodology used to perform each activity is included in the following sections.

## 2.1 RECREATION USE ASSESSMENT

The Recreation Use Assessment consisted of documenting observed usage of the sites, performing a spot count of the number of visitors, and conducting user surveys of visitors at the sites. Recreation usage observations and spot counts were completed over a 2-hour period at each of the four sites. Observation times were randomized for each of the site visit dates specified in the above schedule in Table 2-1, in order to account for time-of-day use patterns. Usage observations consisted of documenting the weather condition, number of people observed, visitor activities, and other pertinent usage notes. For the spot count, field staff recorded the total number of vehicles and visitors observed over a 2-hour period at each site. During the 2-hour period, Merjent field staff also administered user surveys to visitors who were willing to participate. User surveys included collecting visitor opinions on the existing conditions and recreation opportunities. User surveys also asked visitors to rate site utilization on a scale from 1 to 5 (with 1 being underutilized and 5 overcrowded) and the site overall condition on a scale from 1 to 5 (with 1 being poor and 5 being excellent).

The Recreation Use Assessment was recorded using the Fulcrum application, a data collection and process management software. Fulcrum survey forms specific to the usage observations, spot count, and user surveys were developed based on the forms provided by MP and included in the relicensing Revised Study Plan (see Appendix B for sample forms). The user surveys were administered by Merjent field staff directly to visitors. Both digital and hard-copy versions of the user survey forms were available based on visitor preference. Instances in which a visitor declined to complete a survey were not specifically recorded but were occasionally noted on the form.

## 2.2 RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

Data for the Recreation Facility Inventory and Condition Assessment were collected by Merjent staff for each of the Sylvan recreation sites during one of the Recreation Use Assessment visits at the dates specified in the above schedule (Table 2-1) as time allowed. For the condition assessment, staff observed and documented the types and number of amenities provided at each site, including access roads, parking areas and spots, informational and safety signage, boat launches, campsites, restroom facilities, and pedestrian trails. The condition of the site amenities,

as well as any erosion concerns, were also evaluated and documented as either “good condition” or in need of maintenance, repair, or replacement. Photos were taken of general site conditions as well as specific issues, if observed.

Observations were recorded using the Fulcrum application. Fulcrum survey forms specific to this project were developed based on the Recreation Facility Inventory and Condition Assessment form provided by MP and included in the relicensing Revised Study Plan (sample forms included in Appendix B). If conditions were observed requiring immediate action or repair, these were reported to MP as soon as practical following the site visit.

### 3.0 SURVEY RESULTS

The following sections summarize the results of the Recreation Use Assessments and Recreation Facility Inventory and Condition Assessment at each Sylvan recreation site. The forms completed in the field, including the user surveys and photographs, are included in Appendix C.

#### 3.1 SYLVAN DAM BOAT ACCESS AND FISHING AREA

The Sylvan Dam Boat Access and Fishing Area recreation site is located directly downstream of the Sylvan Dam on the Crow Wing River. Site amenities include parking for approximately 20 vehicles (10 spots for anglers and 10 spots for other boaters), a shorefishing area, and a concrete boat ramp. The site is owned by MP, who leases the land to MnDNR for operation and maintenance of the site. There are no set hours or seasons of operation for this site.

##### 3.1.1 Recreation Use Assessment Results

Eighteen recreation use surveys were completed by visitors for this site. Key findings from the visitor use surveys and spot counts are as follows and included in Table 3-1:

- During the spot counts, staff observed a total of 56 people utilizing the site.
- The highest number of visitors during one site visit was 19 people on August 31, 2024. This visit was the beginning of Labor Day weekend. The day was also noted to be sunny with the warmest temperatures of the surveyed dates (80 °F).
- The majority of observed visitors were fishing from the shore, with some launching boats.
- Surveyed visitors indicated sufficient recreation opportunities were offered at the site, except one visitor who mentioned an interest in adding a fishing dock.
- Most visitors reported no concerns for safety at the site. However, four visitors noted safety concerns regarding people climbing on the dam and rocks/rough paths around the shore. One surveyed group noted that the trails down to the fishing area are rough and likely difficult to access for visitors with mobility issues (i.e., elderly, handicap).
- Three people expressed concerns about the access road and large potholes present along the road, in addition to rutting in the east parking area.
- Four visitors mentioned interest in adding garbage cans or restrooms at the site.

Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
5/26/2024	5	3	See Note <sup>(2)</sup>	0	N/A	N/A	N/A	N/A
6/11/2024	4	4	Fishing from the shore	2	3	3 / 3	4.5	5 / 4
6/22/2024	5	3	Fishing from the shore, See Note <sup>(3)</sup>	2	3	3 / 3	3.5	4 / 3

<b>TABLE 3-1</b>								
<b>Sylvan Dam Boat Access and Fishing Area Recreation Use Survey and Spot Count Summary</b>								
Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
7/4/2024	11	4	Fishing from the shore, Fishing from a boat, Bicycling, Dirt Biking	3	3	3 / 3	3	3 / 3
7/25/2024	5	4	Fishing from the shore, Fishing from a boat	2	2.5	3 / 2	3.5	4 / 3
8/13/2024	7	5	Fishing from the shore	2	2	3 / 1	5	5 / 5
8/31/2024	19	10	Fishing from the shore, Viewing wildlife / Birdwatching, Metal detecting	7	3.1	5 / 2	3.9	5 / 3

Notes: <sup>(1)</sup> Utilization rated from 1 to 5, where 1 = “underutilized”, 3 = “moderate”, and 5 = “overcrowded.”

<sup>(2)</sup> Vehicles drove in and immediately left without stopping to complete a survey.

<sup>(3)</sup> One car drove in, stopped to complete a survey, then immediately left.

### 3.1.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Sylvan Dam Boat Access and Fishing Area site are listed in Table 3-2 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey area as follows and included in Table 3-2:

- Site amenities include access roads, parking areas, a boat launch, pedestrian trail, and informational and safety signage. Note, there is no formal fishing pier or platform; however, the area is designated for fishing in general.
- Parking / Roadway Observations:
  - Staff identified erosion in the form of potholes along the access road and significant rutting in the parking area. Erosion of the riverbank or adjacent to the reservoir, indicating potential instability, was not identified.
  - Regrading of the parking area up to the concrete boat launch was noted as a potential maintenance need.
  - A metal rod was observed sticking out of the access road, adjacent to the substation. This rod was observed to have the potential to puncture or damage car tires that drove over it. MP was notified of the metal rod.
- Pedestrian Trail Observations:
  - Pedestrian walkways include gravel paths and stairs down to the fishing area.
  - One set of stairs closest to the dam were observed to have an approximately 3-foot drop at the last step.

- Signage Observations:
  - Signs around the site included informational signage for fishing regulations and trail makers, and safety signage including a “Danger” sign for river currents.
  - The east parking lot site entrance information sign was observed to have degradation and holes that obstruct some of the text.
  - The “Danger” sign at the top of the pedestrian trails on the west side of the site was observed to be vandalized (graffiti). Markings did not appear to obscure the main message on the sign.

<b>Amenity Type</b>	<b>Description</b>	<b>Coordinates</b>	<b>Condition</b>	<b>Condition Notes</b>
Access Road	Two lane access road to the site	46.3045°, -94.3763°	Needs Maintenance	Potholes and rutting along the road
Parking Area	Parking area with approximately 10 regular spaces and 10 spaces to accommodate boat trailers	46.3039°, -94.3758°	Needs Maintenance	Parking area has significant rutting
Boat Launch	Hard surface one lane boat launch	46.3037°, -94.3763°	Good Condition	
Shorefishing Area	Area for fishing on the riverbank downstream of the dam	46.3044°, -94.3770°	Good Condition	
Pedestrian Trail	Trail leading from parking lot to water / boat launch	46.3046°, -94.3768°	Good Condition	
Informational Signage (1)	East parking area sign	46.3043°, -94.3760°	Needs to be Repaired	Significant damage making portions of the sign difficult to read
Informational Signage (2)	Invasive Species Sign	46.3037°, -94.3764°	Good Condition	
Informational Signage (3)	Launch Access Rules Sign	46.3044°, -94.3763°	Good Condition	
Informational Signage (4)	Aquatic Hitchhiker and Access Rules Sign	46.3046°, -94.3769°	Good Condition	
Informational Signage (5)	Boat Launch Rules	46.3037°, -94.3764°	Good Condition	
Informational Signage (6)	No Motorized Vehicles Sign	46.3041°, -94.3765°	Good Condition	
Informational Signage (7)	Aquatic Hitchhiker Sign	46.3039°, -94.3764°	Good Condition	
Safety Signage (8)	Danger sign located at the top of the pedestrian trail in the west parking area	46.3046°, -94.3769°	Needs Maintenance	Minor vandalism in the form of graffiti

### 3.2 SYLVAN CANOE PORTAGE

The Sylvan Canoe Portage recreation site is located on the east side of the Sylvan Dam and includes an approximately 200-yard-long canoe portage trail around the dam. Site amenities also

include an unimproved launch upstream of the dam. The portage uses the concrete boat ramp (part of the Sylvan Dam Boat Access and Fishing Area site) for the downstream launch. The boat launch is operated by the MnDNR, while the remainder of the site is owned, operated, and maintained by MP. There are no set hours or seasons of operation for this site.

Note that the Sylvan Canoe Portage is directly connected to the Sylvan Dam Boat Access and Fishing Area, in that the portage uses the other site's boat launch for the downstream canoe launch spot. During the surveys conducted earlier in the season, field staff did not differentiate if the observed visitors were primarily using the amenities at the Sylvan Dam Boat Access and Fishing Area, rather than Sylvan Canoe Portage. Due to the site proximity (and ability to see both sites from one vantage point), survey staff occasionally performed the 2-hour observation period for the Sylvan Canoe Portage in conjunction with the Sylvan Dam Boat Access and Fishing Area.

### 3.2.1 Recreation Use Assessment Results

Key usage observations are summarized as follows:

- During the May through July 4 spot counts, staff observed 17 people using either the Sylvan Dam Canoe Portage and/or the Sylvan Dam Boat Access and Fishing Area. Activities noted during these surveys included fishing and passing by (drive in/drive out). No canoe portage-related activities were noted, and these visitors were assumed to be primarily using the Sylvan Dam Boat Access and Fishing Area. The spot counts and user surveys are included in the Sylvan Dam Boat Access and Fishing Area observations and field forms.
- Subsequent surveys (July 25 through August) observed only the Sylvan Dam Canoe Portage path, and no visitors were observed, or user surveys were collected during these surveys.

### 3.2.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Sylvan Canoe Portage site are listed in Table 3-3 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey are as follows and included in Table 3-3 below:

- Site amenities include an access road, boat launch, pedestrian trails, and informational signage.
- Roadway Observations:
  - Staff identified erosion in the form of potholes along the access road and near the trail. Erosion of the riverbank or adjacent to the reservoir, indicating potential instability, was not identified.
  - The access road for the Sylvan Dam Canoe Portage is generally shared with the Sylvan Dam Boat Access and Fishing Area. Similar comments on maintenance needs related to rutting and potholes were noted at the Sylvan Dam Boat Access and Fishing Area.
- Boat Launch Observations:
  - The upstream canoe launch is an unimproved gravel launch and was generally noted to be in good condition.

- The downstream canoe launch is shared with the Sylvan Dam Boat Access and Fishing Area, and conditions were evaluated as part of that other site’s survey.
- Signage Observations:
  - Signs around the site included informational signage that marked the portage path and fishing regulations.

<b>TABLE 3-3</b>				
<b>Sylvan Canoe Portage Recreation Facility Inventory and Condition Assessment Summary</b>				
<b>Amenity Type</b>	<b>Description</b>	<b>Coordinates</b>	<b>Condition</b>	<b>Condition Notes</b>
Access Road	Two lane access road to the site (shared with the Sylvan Dam Boat Access and Fishing Area site).	46.3045°, -94.3763°	Needs Maintenance	Potholes and rutting along the road
Boat Launch	Unimproved boat launch upstream of the dam	46.3068°, -94.3781°	Good Condition	
Pedestrian Trail	Portage trail between the upstream unimproved boat launch and the downstream concrete boat launch at the Sylvan Dam Boat Access and Fishing Area site.	46.3060°, -94.3774°	Needs Maintenance	Trail is starting to become overgrown with vegetation.
Informational Signage (1)	No camping sign	46.3059°, -94.3775°	Good Condition	
Informational Signage (2)	Portage markers	46.3063°, -94.3776° and 46.3068°, -94.3782°	Good Condition	

### 3.3 WILDER’S LANDING

The Wilder’s Landing recreation site is located approximately 2 miles upstream of the Sylvan Dam, at the northwest end of the Crow Wing River. Site amenities include parking for approximately 15 vehicles and a concrete boat ramp. The site is owned, operated, and maintained by the MnDNR. There are no set hours or seasons of operation for this site.

#### 3.3.1 Recreation Use Assessment Results

Twelve recreation use surveys were completed by visitors for this site. Key findings from the visitor use surveys and spot counts are as follows and included in Table 3-4 below:

- During the spot count, staff observed a total of 37 people utilizing the site.
- The highest number of visitors during one site visit was 23 people on August 31, 2024. This visit was the beginning of Labor Day weekend, and weather conditions were noted to be sunny and relatively warm (75 °F). On this occasion, the parking lot was observed to be at capacity with additional visitors parking along the access road.
- Visitors indicated sufficient recreation opportunities were offered at the site, excepting one visitor who noted insufficient opportunities, citing that a dock and lamp post would be beneficial, since the site is used at night to bow fish.
- No concerns for safety were indicated.

- Eight people noted they would like a dock for launching boats added to the site, and potentially garbage cans.
- One visitor was unclear whether ATVs were allowed at the site, since previous signage indicating ATV trails had been removed.
- Two visitors noted that the road was rutted and in need of regrading.

**TABLE 3-4**  
**Wilder’s Landing Recreation Use Survey and Spot Count Summary**

Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
5/26/2024	4	2	Fishing from a boat	2	5	5 / 5	3.5	4 / 3
6/12/2024	4	1	Motorized boating	1	3	3 / 3	4	4 / 4
6/22/2024	2	0	Hiking / Walking / Jogging	1	3	3 / 3	4	4 / 4
7/4/2024	3	1	Hiking / Walking / Jogging, Viewing Wildlife / Birdwatching	2	3	3 / 3	4	4 / 4
7/25/2024	0	0	N/A <sup>(2)</sup>	0	N/A	N/A	N/A	N/A
8/13/2024	1	1	Fishing from a boat	1	1	1 / 1	5	5 / 5
8/31/2024	23	13	Motorized boating, Fishing from a boat	5	2.6	4 / 2	4.8	5 / 4

Notes: <sup>(1)</sup> Utilization rated from 1 to 5, where 1 = “underutilized”, 3 = “moderate”, and 5 = “overcrowded.”  
<sup>(2)</sup> No visitors were observed, so no activities were recorded.

### 3.3.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Wilder’s Landing site are listed in Table 3-5 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey are as follows and included in Table 3-5 below:

- Site amenities include an access road, parking area, boat launch, and informational signs.
- Parking / Roadway Observations:
  - Staff identified erosion in the form of minor potholes and rutting on the access road and parking area. Erosion of the riverbank or adjacent to the reservoir, indicating potential instability, was not identified.
  - Potholes in the parking area were occasionally observed to be ponding water.
- Boat Launch Observations:

- Minor erosion on the slope to the boat launch was noted, but the launch was overall in good condition.
- Signage Observations:
  - Signs around the site include informational signage on fishing regulations, identifying the site, and marking handicap parking spaces.
  - One of the two handicap parking spot signs was noted to be falling off its post, although it did not impact the functionality of the sign.
- Other observations include occasional noting of litter throughout the site.

Amenity Type	Description	Coordinates	Condition	Condition Notes
Access Road	Two lane dirt / gravel access road	46.3255°, -94.4108°	Good Condition	Minor erosion
Parking Area	Dirt / gravel parking area with approximately 8 regular spaces and 7 boat trailer spaces	46.3257°, -94.4106°	Good Condition	Minor erosion
Boat Launch	One lane concrete boat launch	46.3254°, -94.4105°	Good Condition	Some minor erosion going down to the launch
Informational Signage (1)	Invasive species signs	46.3253°, -94.4105° and 46.3252°, -94.4105°	Good Condition	
Informational Signage (2)	Fishing regulations sign	46.3253°, -94.4105°	Good Condition	
Informational Signage (3)	Aquatic hitchhiker sign	46.3254°, -94.4104°	Good Condition	
Informational Signage (4)	Boat launch entrance sign	46.3258°, -94.4113°	Good Condition	
Informational Signage (5)	Handicap parking signs	46.3255°, -94.4104°	Needs Repair	One of two handicap signs falling of its post

### 3.4 FISHERMAN’S BRIDGE BOAT LAUNCH AND FISHING AREA

The Fisherman’s Bridge Boat Launch and Fishing Area recreation site is located approximately 0.5 miles upstream of the Sylvan Dam, and the north end of the Sylvan reservoir. Site amenities include a designated shorefishing area with parking for approximately 5 vehicles on the east side of the bridge/river, and a two-lane concrete boat launch and dock with parking for approximately 15 vehicles on the west side of the bridge/river. The site is owned by MP, who leases the land to MnDNR for operation of the site. Maintenance is shared by MP and the MnDNR. There are no set hours or seasons of operation for this site.

#### 3.4.1 Recreation Use Assessment Results

Seventeen recreation use surveys were completed by visitors for this site. Key findings from the visitor use surveys and spot counts are as follows and included in Table 3-6 below:

- During the spot count, staff observed a total of 54 people utilizing the site.
- The highest numbers of visitors during one site visit were 11 and 16 people on August 31, 2024, and May 26, 2024, respectively. Both surveys occurred on holiday weekends (Labor Day and Memorial Day weekends).
- On Labor Day weekend (August 31), the two-lane boat launch on the west side of the bridge was observed to be near capacity with vehicle and trailer parking. This was the only noted occasion where parking was limited / at capacity.
- Visitors indicated sufficient recreation opportunities were offered at the site, with notes that the site is excellent for fishing.
- The majority of visitors indicated no concerns for safety at the site. However, five of the surveyed visitors indicated site safety concerns, including difficult access onto the pedestrian walkway across the south side of the bridge (step is difficult for mobility impaired / elderly) and concern for kids playing on the rocks and jumping off the bridge.
- Five visitors noted they would like to see trash bins and restrooms added to the site.

Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
5/26/2024	16	6	Fishing from the shore, Motorized boating, Bicycling	5	4	5 / 3	4.4	5 / 4
6/11/2024	1	1	Fishing from the shore	1	N/A <sup>(2)</sup>	N/A <sup>(2)</sup>	4	4 / 4
6/23/2024	8	4	Fishing from the shore, Fishing from a boat, Motorized boating	2	3	3 / 3	3.5	4 / 3
7/4/2024	5	3	Fishing from the shore	3	3	3 / 3	3	3 / 3
7/25/2024	9	5	Fishing from the shore, Parked in lot	3	3.7	4 / 3	4	5 / 3
8/13/2024	4	2	Viewing Wildlife / Birdwatching	0	N/A	N/A	N/A	N/A
8/31/2024	11	5	Fishing from the shore	3	1.7	2 / 1	4.3	5 / 4

Notes: <sup>(1)</sup> Utilization rated from 1 to 5, where 1 = “underutilized”, 3 = “moderate”, and 5 = “overcrowded.”

<sup>(2)</sup> The visitor declined to answer the utilization question.

### 3.4.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Fisherman’s Bridge Boat Launch and Fishing Area site are listed in Table 3-7 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey are as follows and included in Table 3-7 below:

- Site amenities include access roads, parking areas, a boat launch, a portable restroom, a boat dock, pedestrian trails, informational signage, and safety signage.
- Minor erosion was noted along the shoreline at the bottom of the fishing access steps and at the top of the slope near the fishing platform/footbridge. Erosion control measures (erosion blanket, riprap/gravel shore protection) were noted in these areas. The erosion appeared generally minor and surficial wash-out and likely does not indicate slumping or global stability issues.
- Parking / Roadway Observations:
  - Erosion in the form of minor potholes and rutting on the west access road and west parking area was also noted during most site visits.
  - Litter was occasionally noted in the parking areas.
- Boat Launch / Dock Observations:
  - Launch included a two-lane concrete larger boat launch on the west side of the river, downstream of the bridge. A boat dock is also present between the two lanes of the boat launch. The launch and dock were observed to be in good condition.
- Shorefishing Area Observations:
  - The site includes a designated shorefishing area on the east side of the river, downstream of the bridge. Fishing also occurs from the wooden pedestrian walkway running adjacent to the roadway across the bridge.
  - The east-bank fishing area was in generally good condition, with litter occasionally noted.
- Pedestrian Trail Observations:
  - Short walking trails and steps to access the fishing areas were observed to be in good condition, with occasional minor vegetation overgrowth.
- Signage Observations:
  - Signs around the site included informational signage on fishing regulations, site amenities, and entrances. Safety signage included a “no diving” sign on the bridge.
  - Most signage was generally observed to be in good condition; however, vegetation growth was occasionally observed to be blocking some informational signage. No safety signs were blocked.
  - The public water access sign was observed to have fallen into the water during the July 25 site visit.
- Note one restroom facility (portable toilet) was observed near the boat launch during the surveys through August 13. The restroom had been removed by the final site visit on August 31.

- Other observations include litter noted consistently throughout the site, including fishing litter around the fishing area on the east side of the bridge. A designated dump area with signage was observed on the west side, near the boat launch parking area.

<b>Amenity Type</b>	<b>Description</b>	<b>Coordinates</b>	<b>Condition</b>	<b>Condition Notes</b>
Access Road	East parking area access road, two lane dirt / gravel road	46.3116°, -94.3805°	Good Condition	
Access Road	West parking area access road, two lane dirt / gravel road	46.3118°, -94.3818°	Good Condition	
Parking Area	Dirt / gravel parking area on east side of bridge, space for approximately 5 vehicles	46.3117°, -94.3803°	Good Condition	
Parking Area	Dirt / gravel parking area on west side of bridge, space for approximately 15 vehicles including space for boat trailers	46.3118°, -94.3818°	Good Condition	Minor erosion observed
Boat Launch	Two lane concrete boat launch	46.3108°, -94.3835°	Good Condition	
Restroom	Portable toilet in the west parking area. Was not present during August 31 site visit.	46.3116°, -94.3805°	Good Condition	
Boat Dock	Boat dock adjacent to launch	46.3108°, -94.3835°	Good Condition	
Shorefishing Area	Designated area on east side of river; fishing also occurs from wooden pedestrian bridge.	46.3117°, -94.3808°	Good Condition	Some litter noted
Pedestrian Trail	Trails from parking areas to fishing areas	46.3117°, -94.3810° and 46.3118°, -94.3815°	Good Condition	Slightly overgrown in some areas
Informational Signage (1)	Disposal sign in west parking area	46.3108°, -94.3839°	Good Condition	
Informational Signage (2)	Invasive species sign on west side of bridge	46.3117°, -94.3819°	Needs Maintenance	Sign is mostly obscured by vegetation
Informational Signage (3)	Public water access sign on west side of bridge	46.3115°, -94.3821°	Needs Maintenance	Sign is mostly obscured by vegetation
Informational Signage (4)	Site entrance signs	46.3116°, -94.3804° and 46.3115°, -94.3837°	Good Condition	
Informational Signage (5)	Invasive species sign near concrete launch	46.3108°, -94.3836°	Good Condition	
Informational Signage (6)	Public water access signs near concrete launch and west access road	46.3108°, -94.3836° and 46.3124°, -94.3833°	Good Condition	
Informational Signage (7)	Part 8 marker near concrete launch	46.3108°, -94.3836°	Good Condition	

<b>TABLE 3-7</b>				
<b>Fisherman’s Bridge Boat Launch and Fishing Area Recreation Facility Inventory and Condition Assessment Summary</b>				
<b>Amenity Type</b>	<b>Description</b>	<b>Coordinates</b>	<b>Condition</b>	<b>Condition Notes</b>
Informational Signage (8)	Access road permitted use sign	46.3122°, -94.3834°	Good Condition	
Safety Signage (9)	No diving off of bridge sign	46.3119°, -94.3809°	Good Condition	
Informational Signage (10)	No dumping sign in east parking area	46.3117°, -94.3806°	Good Condition	

## 4.0 CAPACITY ANALYSIS OF USER SURVEYS

The user survey data was further analyzed to evaluate the current and predicted capacity at each recreation site. Assessment of existing capacity included computing the average number of visitors over the 2-hour survey period and one recreation day, as well as the average reported site utilization scores. Given typical daylight hours and that there are no set hours of operation for any of the recreation sites, one recreation day was assumed to be 10 hours long. Visitors per recreation day was computed by projecting the 2-hour visitor count over 10 hours. The assessment also included comparing the number of observed vehicles versus available parking spaces. Existing capacity was evaluated as follows:

- “Sufficient” – Average site utilization score of 4 or lower and average number of vehicles was less than 90% of available parking spaces
- “Insufficient” – Average site utilization score greater than 4 and average number of vehicles regularly exceeded available number of spots

Results of the existing capacity evaluation are presented in the following Table 4-1.

<b>User Survey Existing Capacity Analysis</b>						
<b>Site</b>	<b>Avg. No. of Visitors (2-hr)</b>	<b>Visitors Per Recreation Day <sup>(1)</sup></b>	<b>Avg. No. of Vehicles (2-hr)</b>	<b>No. of Parking Spots</b>	<b>Avg. Site Utilization Score <sup>(2)</sup></b>	<b>Existing Capacity</b>
Sylvan Dam Boat Access and Fishing Area	8.0	40	4.7	20	2.8	Sufficient
Sylvan Canoe Portage	0 <sup>(3)</sup>	0	0	0	N/A <sup>(3)</sup>	Sufficient
Wilder’s Landing	5.3	27	2.6	15	2.9	Sufficient
Fisherman’s Bridge Boat Launch and Fishing Area	7.7	39	3.7	20	3.1	Sufficient

Notes: <sup>(1)</sup> A “recreation day” assumed to be one 10-hour day.

<sup>(2)</sup> Site utilization scores ranged from 1 to 5, with 1 being underutilized and 5 being overcrowded.

<sup>(3)</sup> No visitors were observed, and no user surveys were completed for this site.

Predicted capacity was evaluated at the end of the Project’s assumed 40-year license period. The projected number of visitors was estimated using county and state census population data from the U.S. Census Bureau (U.S. Census Bureau, 2022a and 2022b). The population change from 2010 to 2020 for Morrison County, Crow Wing County, Cass County, and the state of Minnesota was a 2.4%, 5.8%, 5.2%, and 7.6% increase, respectively. This equates to an average 5.25% increase in population in 10 years, or 23% increase over 40 years. The growth rate was applied to the current visitor counts to estimate the projected number of visitors. This increase was also applied to the site utilization scores, given the increased number of visitors. The number of projected vehicles was computed based on the current ratio of vehicles per visitor in the 2-hour survey period and compared to the available parking spaces. No increase in number of parking spaces was assumed. Predicted capacity was evaluated using the same “Sufficient” and “Insufficient” designation as described above. Results of the existing capacity evaluation are presented in the following Table 4-2.

<b>Site</b>	<b>Avg. No. of Visitors (2-hr)</b>	<b>Visitors Per Recreation Day <sup>(1)</sup></b>	<b>% Increase in Visitors</b>	<b>Projected Site Utilization Score <sup>(2)</sup></b>	<b>Visitors per Vehicle</b>	<b>Avg. No. of Vehicles (2-hr)</b>	<b>No. of Parking Spots</b>	<b>Projected Capacity</b>
Sylvan Dam Boat Access and Fishing Area	9.8	49	23%	3.4	1.7	5.8	20	Sufficient
Sylvan Canoe Portage	0 <sup>(3)</sup>	0	23%	N/A <sup>(3)</sup>	0	0	0	Sufficient
Wilder's Landing	6.5	33	23%	3.6	2.0	3.2	15	Sufficient
Fisherman's Bridge Boat Launch and Fishing Area	9.4	47	23%	3.8	2.1	4.5	20	Sufficient

Notes: <sup>(1)</sup> A "recreation day" assumed to be one 10-hour day.

<sup>(2)</sup> Site utilization scores ranged from 1 to 5, with 1 being underutilized and 5 being overcrowded.

<sup>(3)</sup> No visitors were observed, and no user surveys were completed for this site; therefore, minimal to no projected usage was assumed.

## 5.0 CONCLUSIONS

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The Recreation Use and Facility Inventory Study was completed in accordance with the Revised Study Plan for the relicensing of the Sylvan Hydroelectric Project (Kleinschmidt, 2024). Data on site conditions, public usage, and visitor opinions were gathered over a series of site visits conducted from May through September 2024. Key findings and conclusions are summarized as follows:

### 5.1 RECREATION USE ASSESSMENT CONCLUSIONS

Results of the recreation usage observations, spot counts, and visitor surveys indicate that there is moderate usage of the Sylvan Dam Boat Access and Fishing Area, Wilder’s Landing, and Fisherman’s Bridge Boat Launch and Fishing Area. Occasional overcrowding was cited by visitors at these sites. Activities at all three sites typically included use of the boat launch and fishing, with occasional hiking / nature watching noted. Minimal recreation usage of the Sylvan Canoe Portage was observed, and visitors around the site were typically using amenities at the adjacent boat access/fishing area.

Of the user surveys completed, the majority at all sites indicated sufficient recreation opportunities. The sites were typically identified by users as in good condition. Safety was generally not considered an issue at most sites. However, several visitors at the Sylvan Dam Boat Access and Fishing Area noted concerns for safety for people climbing on the dam and rocks, and that the trails to the fishing area are not accessible for the mobility impaired or elderly. Similar concerns for safety related to accessibility and people climbing on rocks/the bridge were reported at Fisherman’s Bridge Boat Launch and Fishing Area.

Except the Sylvan Canoe Portage, which had no observed portages, the Sylvan recreation sites were typically identified as moderately utilized. The analysis of the user survey data indicates that on average, there is sufficient capacity at all recreation sites for both current and projected usage at the end of the license period. However, higher usage (greater number of visitors/vehicles and higher utilization scores) occurred on the Memorial Day and Labor Day holiday weekends at the Sylvan Dam Boat Access and Fishing Area, Wilder’s Landing, and Fisherman’s Bridge Boat Launch and Fishing Area sites. Overcrowding was noted by 1 or 2 visitors at these sites on the holiday weekend surveys. The number of vehicles did not exceed the number of available parking spaces. There appears to be adequate capacity for increases in recreation use at these sites, with the potential for occasional overcrowding during holiday weekends.

### 5.2 FACILITY INVENTORY AND CONDITION ASSESSMENT CONCLUSIONS

The amenities at the recreation sites included roadways, parking areas, boat launches, shorefishing areas, pedestrian trails, and signage. Little to no signs of major degradation, vandalism, or disrepair were noted.

Items noted for maintenance or repair included parking lots and roadways at all sites, which were observed to have potholes and rutting. Vegetation maintenance also appeared to be a common maintenance issue at the sites, with overgrown vegetation occasionally noted along roadways, pedestrian and portage trails, and blocking signage. The vegetation overgrowth at the boat launches and trails could potentially hide the visitor’s ability to find and use the amenities. Signage

was generally in good condition. However, the need for maintenance or replacement of several signs was identified to address the following signs / locations:

- Vandalism of the “Danger” safety sign at the Sylvan Dam Boat Access and Fishing Area
- Degradation of the wooden site entrance informational sign at the Sylvan Dam Boat Access and Fishing Area
- Handicap parking sign partially fallen off of post at Wilder’s Landing
- Public Water Access sign had fallen over into the river at Fisherman’s Bridge Boat Launch and Fishing Area

Erosion associated with the slopes was noted only at the Fisherman’s Bridge Boat Launch and Fishing Area site, near the fishing area. Existing erosion control measures were observed, and maintenance or additional placement of gravel/riprap may be required at this site. No signs of significant erosion or slope global instability were noted at any of the sites.

Based on the user survey results, the sites were typically identified to be in good condition. This is generally consistent with the findings from the recreation facility inventory and condition assessment performed by Merjent.

## 6.0 REFERENCES

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- Kleinschmidt Associates. 2024. Revised Study Plan, Little Falls Hydroelectric Project FERC P-2532, Sylvan Hydroelectric Project FERC P-2454, Pillager Hydroelectric Project FERC P-2663, e-filed: January 9, 2024.
- U.S. Census Bureau. 2022a. QuickFacts: Little Falls city, Minnesota; Baxter city, Minnesota; Morrison County, Minnesota; Crow Wing County, Minnesota; Cass County, Minnesota; Minnesota. Available online at: <https://www.census.gov/quickfacts/fact/table/littlefallscityminnesota,baxtercityminnesota,morrisoncountyminnesota,crowwingcountyminnesota,casscountyminnesota,MN/PST045222>. Accessed January 2025.
- U.S. Census Bureau. 2022b. American Community survey 5-year data (2009-2021). Census.gov. Available online at: <https://www.census.gov/data/developers/data-sets/acs-5year.html>. Accessed January 2025.

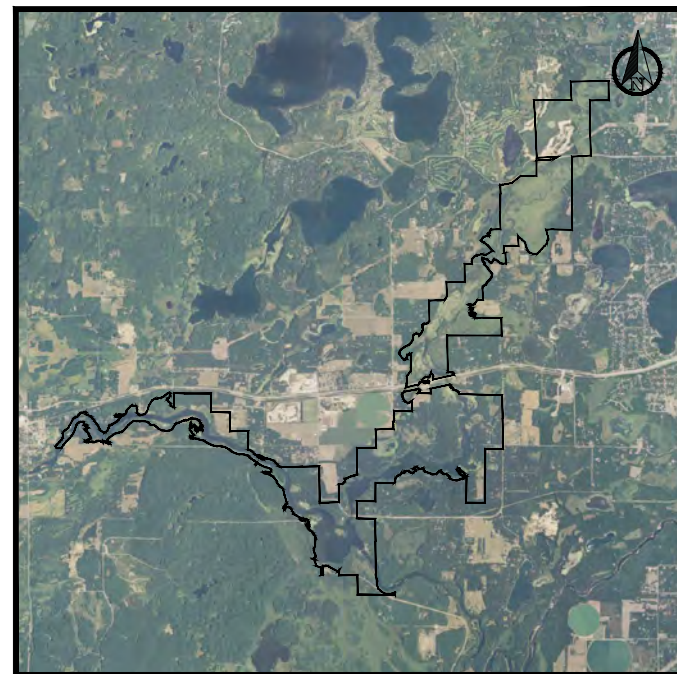


## **Appendix A - Site Locations and Aerial Overviews**

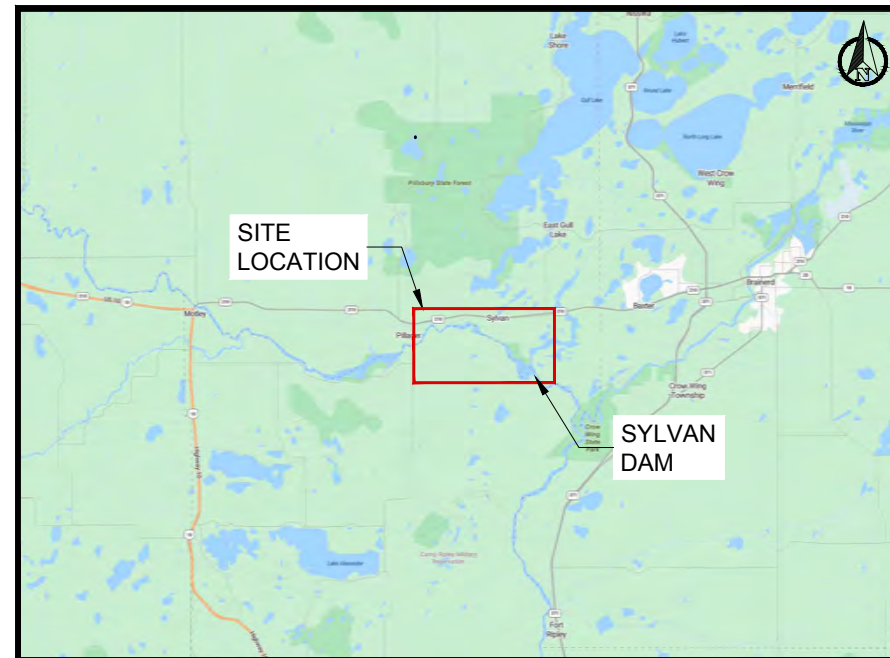
# SYLVAN HYDROELECTRIC PROJECT RECREATION USE AND FACILITY INVENTORY STUDY

## FOR MINNESOTA POWER

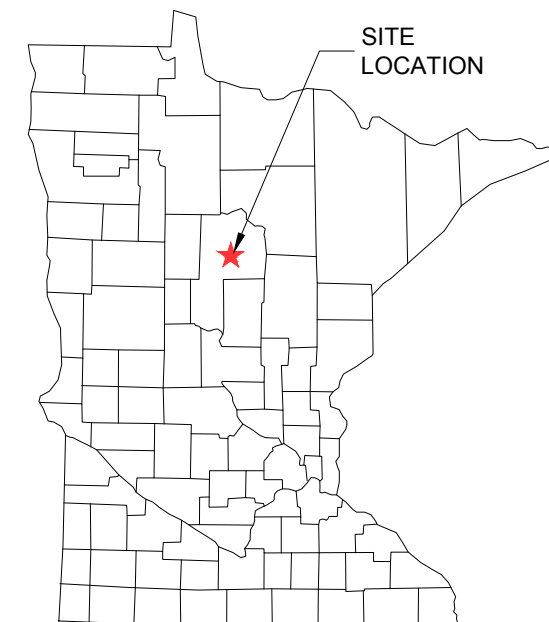
### CASS, CROW WING, AND MORRISON COUNTIES, MINNEOSTA



VICINITY MAP  
SCALE 1" = 7000'



LOCATION MAP  
NOT TO SCALE



STATE MAP  
NOT TO SCALE

INDEX	NO.
TITLE SHEET	1
OVERVIEW	2
SYLVAN DAM BOAT ACCESS AND FISHING AREA	3
SYLVAN CANOE PORTAGE	4
WILDER'S LANDING	5
FISHERMAN'S BRIDGE BOAT LAUNCH AND FISHING AREA	6



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#### REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D
0	OCT. 2024	EXHIBITS FOR RECREATION STUDY	AJ	EFB	
1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB	

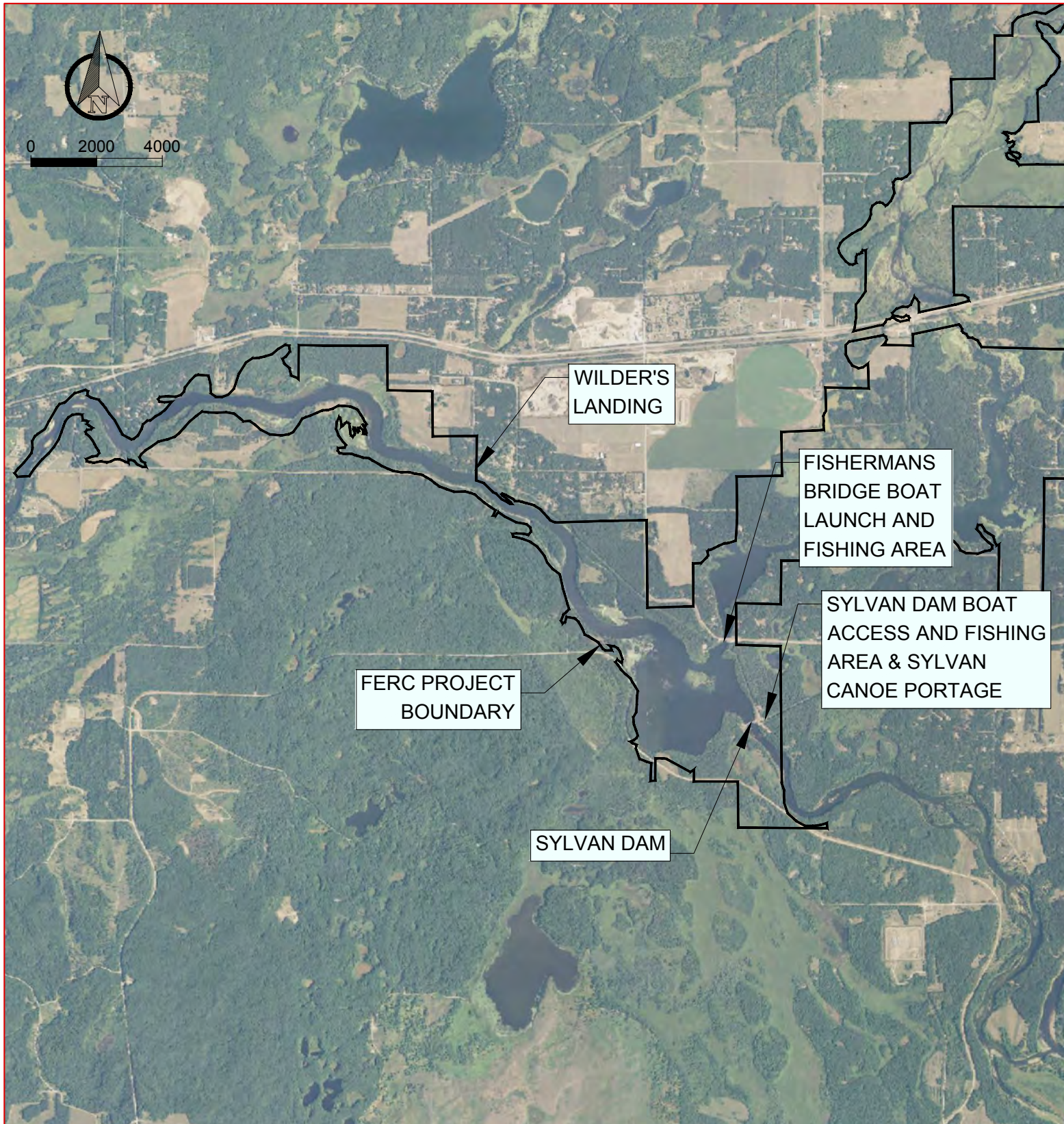
MINNESOTA POWER  
SYLVAN HYDROELECTRIC PROJECT RECREATION USE AND  
FACILITY INVENTORY STUDY  
CASS, CROW WING, AND MORRISON COUNTIES, MINNEOSTA

DRAWING NO.

**C100**

TITLE SHEET

SHEET 1 OF 6



## SYLVAN RECREATION SITES

### SYLVAN DAM BOAT ACCESS AND FISHING AREA:

LOCATION: CONCRETE BOAT LAUNCH PROVIDING ACCESS TO THE CROW WING RIVER BELOW THE DAM. OFF SYLVAN DAM RD SW.

COORDINATES:

LATITUDE: 46°18'13.65"N

LONGITUDE: 94°22'34.82"W

DESCRIPTION: PARKING FOR APPROXIMATELY 20 VEHICLES (10 FOR ANGLERS, 10 FOR BOATERS), A SHORE FISHING AREA, AND A CONCRETE BOAT RAMP.

OWNER/OPERATOR: MINNESOTA DNR; MP LEASES THE SITE TO DNR

### SYLVAN CANOE PORTAGE:

LOCATION: PORTAGE AROUND THE DAM. LOCATED ON THE EAST SIDE OF THE DAM OFF SYLVAN DAM RD SW.

COORDINATES:

LATITUDE: 46°18'21.34"N

LONGITUDE: 94°22'39.02"W

DESCRIPTION: APPROXIMATELY 200-YARD LONG CANOE PORTAGE AROUND THE DAM. UNIMPROVED LAUNCH UPSTREAM OF THE DAM AND UTILIZING THE CONCRETE BOAT RAMP DOWNSTREAM OF THE DAM.

OWNER/OPERATOR: MP

### WILDER'S LANDING:

LOCATION: BOAT LAUNCH AT THE NORTHWEST END OF THE CROW WING RIVER. OFF 25TH AVE SW.

COORDINATES:

LATITUDE: 46°19'31.14"N

LONGITUDE: 94°24'37.49"W

DESCRIPTION: PARKING FOR APPROXIMATELY 15 VEHICLES AND A CONCRETE BOAT RAMP.

OWNER/OPERATOR: MINNESOTA DNR

### FISHERMAN'S BRIDGE BOAT LAUNCH AND FISHING AREA:

LOCATION: LOCATED ON THE NORTH END OF SYLVAN RESERVOIR. OFF 136TH ST SW.

COORDINATES:

LATITUDE: 46°18'41.81"N

LONGITUDE: 94°22'51.10"W

DESCRIPTION: DESIGNATED SHOREFISHING AREA WITH PARKING FOR APPROXIMATELY FIVE VEHICLES ON THE EAST SIDE OF RIVER. TWO LANE CONCRETE BOAT LAUNCH AND DOCK WITH PARKING FOR APPROXIMATELY 15 VEHICLES ON THE WEST SIDE OF RIVER.

OWNER/OPERATOR: MINNESOTA DNR; MP LEASES THE SITE TO DNR.



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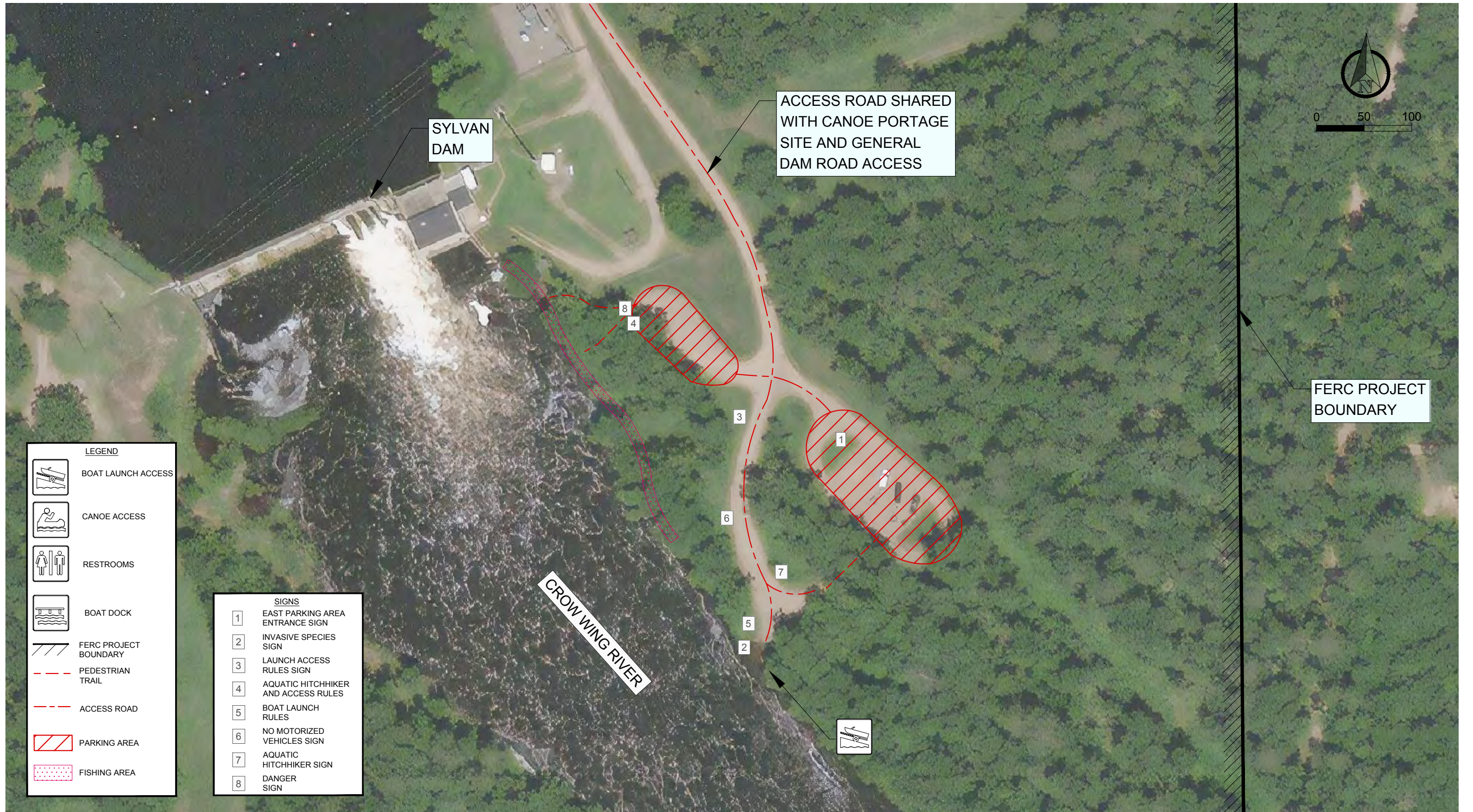
MINNESOTA POWER  
**SYLVAN HYDROELECTRIC PROJECT RECREATION USE AND FACILITY INVENTORY STUDY**  
CASS, CROW WING, AND MORRISON COUNTIES, MINNEOSTA

DRAWING NO.

**C101**

OVERVIEW

SHEET 2 OF 6



SITE OVERVIEW  
SYLVAN DAM BOAT ACCESS AND FISHING AREA

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1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB	

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SYLVAN HYDROELECTRIC PROJECT RECREATION USE AND FACILITY INVENTORY STUDY  
CASS, CROW WING, AND MORRISON COUNTIES, MINNEOSTA

SYLVAN DAM BOAT ACCESS AND FISHING AREA

DRAWING NO.  
**C102**

SHEET 3 OF 6

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)



SITE OVERVIEW  
SYLVAN CANOE PORTAGE



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1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB	

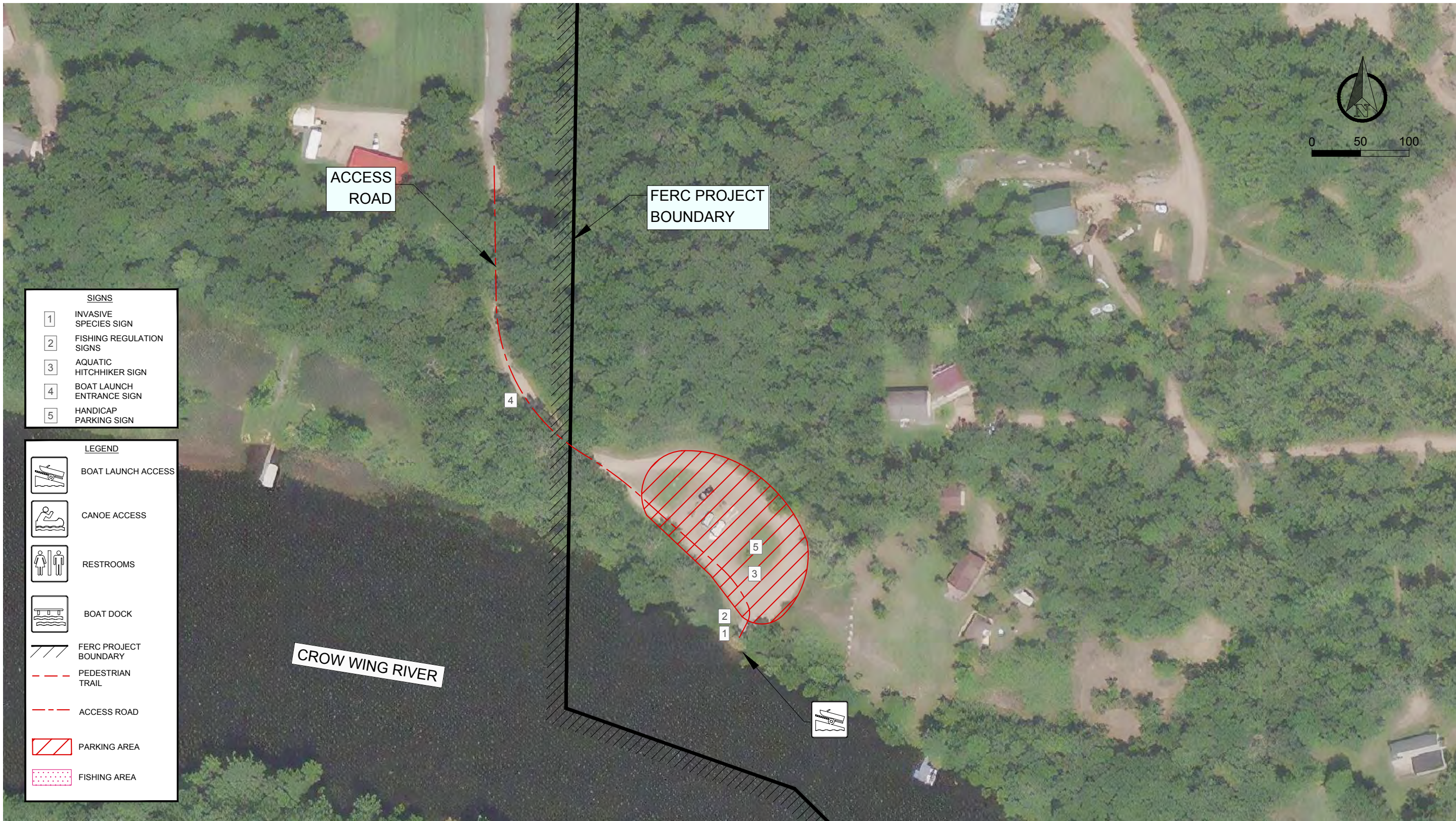
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SYLVAN HYDROELECTRIC PROJECT RECREATION USE AND  
FACILITY INVENTORY STUDY  
CASS, CROW WING, AND MORRISON COUNTIES, MINNEOSTA

DRAWING NO.

**C103**

SYLVAN CANOE PORTAGE

SHEET 4 OF 6



- SIGNS**
- 1 INVASIVE SPECIES SIGN
  - 2 FISHING REGULATION SIGNS
  - 3 AQUATIC HITCHHIKER SIGN
  - 4 BOAT LAUNCH ENTRANCE SIGN
  - 5 HANDICAP PARKING SIGN

- LEGEND**
- BOAT LAUNCH ACCESS
  - CANOE ACCESS
  - RESTROOMS
  - BOAT DOCK
  - FERC PROJECT BOUNDARY
  - PEDESTRIAN TRAIL
  - ACCESS ROAD
  - PARKING AREA
  - FISHING AREA

SITE OVERVIEW  
WILDER'S LANDING



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MINNESOTA POWER  
**SYLVAN HYDROELECTRIC PROJECT RECREATION USE AND FACILITY INVENTORY STUDY**  
CASS, CROW WING, AND MORRISON COUNTIES, MINNEOSTA

DRAWING NO.  
**C104**

WILDER'S LANDING

SHEET 5 OF 6



**SITE OVERVIEW  
FISHERMAN'S BRIDGE BOAT LAUNCH &  
FISHING AREA**



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MINNESOTA POWER  
**SYLVAN HYDROELECTRIC PROJECT RECREATION USE AND  
FACILITY INVENTORY STUDY**

CASS, CROW WING, AND MORRISON COUNTIES, MINNEOSTA

FISHERMAN'S BRIDGE BOAT LAUNCH AND FISHING AREA

DRAWING NO.

**C105**

SHEET 6 OF 6



**Appendix B -  
Sample Data Collection Forms**

**Sylvan Project (P-2454), Pillager Project (P-2663)**

**Recreation Facility Inventory and Condition Assessment Form**

**Surveyor:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_

**Project:**  Sylvan  Pillager

**Sylvan Recreation Site:**  Wilder's Landing;  Fisherman's Bridge Boat Launch and Fishing Area;  
 Sylvan Dam Boat Access and Fishing Area;  Sylvan Canoe Portage

**Pillager Recreation Site:**  Alvah's Landing (Minnesota DNR Boat Launch);  Pillager Dam Public Boat Launch;  Pillager Dam Public Canoe Portage and Shorefishing Access;  Crow Wing River Canoe Campsite

**GPS Coordinates:** \_\_\_\_\_

\*Please note:

- 1) Photos of **all** facilities, amenities, signs, parking areas, roads, and areas of erosion should be taken. Location of each needs to be specified via GPS coordinates or on sketch.
- 2) If there is more than one facility/amenity of the same type, and they are in different conditions, this needs to be distinguished in notes on this form. Location of each needs to be specified via GPS coordinates or on sketch, and condition should be specified in some way to distinguish the varied conditions for the same facility/amenity type.
- 3) If there is not sufficient space on this form for notes, pages may be added as needed.

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**Site Type:**

Boat Launch Area                       Fishing Area                       Picnic Area  
 Trail     Campsite                       Other: \_\_\_\_\_

---

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**Road Access:**                      Condition Description (N-replace, R-repair, M-maintain, G-good):

# entrances \_\_\_\_\_ # lanes \_\_\_\_\_ Condition \_\_\_\_\_

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**Parking Area:**                      Condition Description (N-replace, R-repair, M-maintain, G-good): \_\_\_\_\_

Type	# Estimated Spaces	Delineation
Designated Handicap Spaces	_____	<input type="checkbox"/> Signage
Regular Spaces	_____	
Vehicle & Trailer Spaces	_____	

Other Notes: \_\_\_\_\_

---

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**Site Amenities (if needed, please provide additional specifications on additional pages):**

#	Type	Condition (N-replace, R-repair, M-maintain, G-good) for each <sup>1</sup>
_____	Restrooms	_____
_____	Fishing Pier/Platform	_____
_____	Boat Launch	_____
_____	Boat Dock	_____
_____	Pedestrian Trail	_____
_____	Firepit/ring	_____
_____	Information Kiosk	_____
_____	Informational Signage	_____
_____	Safety Signage	_____
_____	Campsite (primitive)	_____
_____	Campsite (improved)	_____

Other (specify) \_\_\_\_\_  
 \_\_\_\_\_

**Boat Launch:** Condition Description (N-replace, R-repair, M-maintain, G-good):

\_\_\_\_\_

Hard surface     Gravel     Unimproved (informal)    \_\_\_\_\_ # of Lanes

Other notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Boat Dock / Fishing Pier:** Condition Description (N-replace, R-repair, M-maintain, G-good):

\_\_\_\_\_

Boat Dock (can secure boat to platform)     Fishing Pier (cannot secure boat to platform)

Other notes (include dimensions): \_\_\_\_\_  
 \_\_\_\_\_

**Trails (within the recreation site):** Condition Description (N-replace, R-repair, M-maintain, G-good)

Type: \_\_\_\_\_ Condition: \_\_\_\_\_  
 Type: \_\_\_\_\_ Condition: \_\_\_\_\_  
 Type: \_\_\_\_\_ Condition: \_\_\_\_\_

Other notes: \_\_\_\_\_  
 \_\_\_\_\_

<sup>1</sup> If more than one and different conditions, distinguish the condition/location of each. Can label by number and indicate on sketch. If all are the same condition, don't need to specify with label.

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---

**Signage / Interpretive Information:** Condition Description (N-replace, R-repair, M-maintain, G-good)

- Part 8                      Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Trail Markers              Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Historical                      Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Fishing Regulations      Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Boating Safety              Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Informational              Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_ Content: \_\_\_\_\_
- Other: \_\_\_\_\_ Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_

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**Restrooms:**                                      Condition Description (N-replace, R-repair, M-maintain, G-good)

# Flush: \_\_\_\_\_ # Portable: \_\_\_\_\_ Condition: \_\_\_\_\_

---

**Erosion:**

- Areas of noticeable erosion, slumping, or other forms of instability

**Description of Erosion:**

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**Evidence of use at site:** \_\_\_\_\_

(C) Compaction, (E) Erosion, (L) Litter, (UI) Unauthorized improvements, (V) Vandalism, (O) Other (Specify)

**Evidence of overcrowding:** \_\_\_\_\_

(A) Anecdotal information, (I) Improper parking, (SD) Site degradation, (U) Unauthorized sites, (W) Waiting lines, (O) Other (Specify)

---

**Notes (including general condition, any restrictions/alerts, invasive species, etc.):**

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**Sketch of Site, including all facilities and amenities:**

**Sylvan Project (P-2454), Pillager Project (P-2663)**  
**Recreational Observations / Spot Counts**

**Observer:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Start time:** \_\_\_\_\_ **End time:** \_\_\_\_\_

**Weather:**  Sunny;  Partly Cloudy;  Cloudy;  Light Rain;  Heavy Rain

**Approximate Temperature (°F):** \_\_\_\_\_

**1. Project:**  Sylvan  Pillager

**2. Sylvan Recreation Site:**

- Wilder's Landing
- Fisherman's Bridge Boat Launch and Fishing Area
- Sylvan Dam Boat Access and Fishing Area
- Sylvan Canoe Portage

**3. Pillager Recreation Site:**

- Alvah's Landing (Minnesota DNR Boat Launch)
- Pillager Dam Public Boat Launch
- Pillager Dam Public Canoe Portage and Shorefishing Access

**4. Number of People Observed:** \_\_\_\_\_ (Time of spot count: \_\_\_\_\_)

**5. Number of Vehicles Observed:** \_\_\_\_\_ (Time of spot count: \_\_\_\_\_)

**6. Observed Activities:**

- Fishing from the shore
- Fishing from a boat
- Motorized boating
- Canoe / Kayaking / Stand-up Paddle Boarding
- Waterskiing / Wakeboarding / Tubing
- Swimming
- Hiking / Walking / Jogging
- Bicycling
- Picnicking
- Camping
- Viewing Wildlife / Birdwatching
- Photography
- Other: \_\_\_\_\_

**7. Notes:**

---

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---

**Sylvan Project (P-2454), Pillager Project (P-2663)**

**Recreational Use Survey Form**

A. **Observer:** \_\_\_\_\_

B. **Date:** \_\_\_\_\_

C. **Time:** \_\_\_\_\_

D. **Project:**  Sylvan  Pillager

**E. Sylvan Recreation Site:**

- Wilder's Landing
- Fisherman's Bridge Boat Launch and Fishing Area
- Sylvan Dam Boat Access and Fishing Area
- Sylvan Canoe Portage

**Pillager Recreation Site:**

- Alvah's Landing (Minnesota DNR Boat Launch)
- Pillager Dam Public Boat Launch
- Pillager Dam Public Canoe Portage and Shorefishing Access

**1. The purpose of the survey is to obtain information about recreation user experience at the site and to determine adequacy of the site. This recreational use survey is in association with the relicensing process for the Sylvan and Pillager Hydroelectric Projects. The survey will take approximately 5 minutes and is completely anonymous. No personal information will be collected. Would you be willing to participate in the survey?**

Yes  No

**2. Including yourself, how many people are in your party today?** \_\_\_\_\_

**3. Of the activities listed above, please indicate which is the primary activity of this trip?**  
*(Choose only one)*

- Fishing from the shore
- Fishing from a boat
- Motorized boating
- Canoe / Kayaking / Stand-up Paddle Boarding
- Waterskiing / Wakeboarding / Tubing
- Swimming
- Hiking / Walking / Jogging
- Bicycling
- Picnicking
- Camping
- Viewing Wildlife / Birdwatching
- Photography
- Other: \_\_\_\_\_

4. On a scale from 1 to 5, with 1 being underutilized and 5 overcrowded, how much do you perceive this site is used for recreation? (Circle one number)

1	2	3	4	5
Underutilized		Moderate		Overcrowded

5. In your opinion, are the amount and types of recreation opportunities offered at this site sufficient?

Yes;  No;  N/A

*If no, please explain:*

---

6. On a scale from 1 to 5, with 1 being poor and 5 excellent, how would you rate the overall condition of this site? (Circle one number)

1	2	3	4	5
Poor	Fair	Satisfactory	Good	Excellent

*If your rating is 1-2, please explain:*

---

7. Do you have any concerns of safety at this site?

Yes;  No;  N/A

*If yes, please explain:*

---

8. Do you have any additional comments about public recreation opportunities and facilities at this recreation site? (Please be as specific as possible):

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**Thank you for participating in this survey!**



## **Appendix C - Survey Data Forms and Photos**



## ***Sylvan Dam Boat Access and Fishing Area***

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### BACKGROUND

---

OBSERVER NAME Amanda Carlson	DATE 2024-05-26	START TIME 10:00
END TIME 12:00	PROJECT Sylvan	SITE NAME Sylvan Dam Boat Access & Fishing Area

#### RECREATIONAL OBSERVATION FORM

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WEATHER Cloudy	TEMPERATURE 64	NUMBER OF PEOPLE OBSERVED 5	NUMBER OF VEHICLES OBSERVED 3
-------------------	-------------------	--------------------------------	----------------------------------

#### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other: Drove in and drove out. No boat or canoe

#### NOTES

One car drove in and out without completing a survey.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION ---	SUFFICIENT OPPORTUNITIES TALLY	AVERAGE CONDITION ---	SAFETY CONCERNS TALLY
---------------------------------	--------------------------------	--------------------------	-----------------------

#### RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-06-11	START TIME 08:18
END TIME 10:18	PROJECT Sylvan	SITE NAME Sylvan Dam Boat Access & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Partly Cloudy	TEMPERATURE 63	NUMBER OF PEOPLE OBSERVED 4	NUMBER OF VEHICLES OBSERVED 4
--------------------------	-------------------	--------------------------------	----------------------------------

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

Overall great spot for shore fishing. Not too overcrowded. Easily accessed. One vehicle drove in and out without completing a survey.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

2

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION 4.5	SAFETY CONCERNS TALLY Yes: 0 No: 2
-------------------------------	--	--------------------------	---------------------------------------

#### RECREATIONAL USER SURVEY FORM

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Easy access, not too overcrowded.

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 5	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? ---	IF YES, PLEASE EXPLAIN: ---
---	--------------------------------

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-06-22	START TIME 12:15
END TIME 14:16	PROJECT Sylvan	SITE NAME Sylvan Dam Boat Access & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Cloudy	TEMPERATURE 65	NUMBER OF PEOPLE OBSERVED 5	NUMBER OF VEHICLES OBSERVED 3
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other: Vehicle drove in to check out the water

##### NOTES

Very little traffic during observation time. The site is in good condition.

#### SURVEY SUMMARY

##### Primary Activities by Type

:	1
Fishing from the shore:	1

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION 3.5	SAFETY CONCERNS TALLY Yes: 0 No: 2
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#### RECREATIONAL USER SURVEY FORM

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Checking the water

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
---

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
---

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

3

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Great place to fish.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-07-04	START TIME 12:00
END TIME 14:00	PROJECT Sylvan	SITE NAME Sylvan Dam Boat Access & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Partly Cloudy	TEMPERATURE 73	NUMBER OF PEOPLE OBSERVED 11	NUMBER OF VEHICLES OBSERVED 4
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other: Dirt bikers

##### NOTES

---

#### SURVEY SUMMARY

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY <b>Yes: 3 No: 0</b>	AVERAGE CONDITION 3	SAFETY CONCERNS TALLY <b>Yes: 0 No: 3</b>
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#### RECREATIONAL USER SURVEY FORM

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? **1**

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
**Fishing from a boat**

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
**3**

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
**3**

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
The parking area is in rough shape.

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? **1**

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
**3**

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
**3**

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Great place to fish

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 3

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:

---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

A platform for shore fishing. On crowded days it would provide additional safe space for fishing.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-07-25	START TIME 12:07
END TIME 14:07	PROJECT Sylvan	SITE NAME Sylvan Dam Boat Access & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 76	NUMBER OF PEOPLE OBSERVED 5	NUMBER OF VEHICLES OBSERVED 4
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

One group did not want to be surveyed. One drove in and out. I had one conversation with a guy that grew up there and would like to see some trash bins on site along with trying to prevent people from doing doughnuts in the parking area.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from a boat:

1

Fishing from the shore:

1

AVERAGE SITE UTILIZATION 2.5	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION 3.5	SAFETY CONCERNS TALLY Yes: 2 No: 0
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#### RECREATIONAL USER SURVEY FORM

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from a boat	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: People climbing on the dam
--	---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Adding a trash can would be good, people dump carp and trash often

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 2
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
---	--

CONDITION OF THIS SITE?

3

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

IF YES, PLEASE EXPLAIN:

Yes  No  N/A

Gotta be careful on rocks

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-08-13	START TIME 08:38
END TIME 10:39	PROJECT Sylvan	SITE NAME Sylvan Dam Boat Access & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 65	NUMBER OF PEOPLE OBSERVED 7	NUMBER OF VEHICLES OBSERVED 5
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#### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

#### NOTES

2 groups didn't wish to answer the survey. One group told me "Stuff needs fixed" as they left. One gentleman was willing to fill out the survey. One truck drove in and out.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

1

Fishing from a boat:

1

AVERAGE SITE UTILIZATION 2	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION 5	SAFETY CONCERNS TALLY Yes: 1 No: 1
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#### RECREATIONAL USER SURVEY FORM

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:

Rocks can be hard to climb around by the shore.

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

The osprey nest on the other side of the river is cool to watch them fish.

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

1

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

CONDITION OF THIS SITE?

5

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
SITE? ---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Would like people to pick up their trash.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### BACKGROUND

OBSERVER NAME	DATE	START TIME
Austin Johnson	2024-08-31	13:55
END TIME	PROJECT	SITE NAME
15:55	Sylvan	Sylvan Dam Boat Access & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER	TEMPERATURE	NUMBER OF PEOPLE OBSERVED	NUMBER OF VEHICLES OBSERVED
Sunny	80	19	10

#### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other: Metal detecting

#### NOTES

There were a few groups shore fishing. I think I surveyed one group actually launching a boat.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:	4
Viewing Wildlife/Birdwatching:	1
:	1
Fishing from a boat:	1

AVERAGE SITE UTILIZATION	SUFFICIENT OPPORTUNITIES TALLY	AVERAGE CONDITION	SAFETY CONCERNS TALLY
3.142857142857143	Yes: 6 No: 1	3.857142857142857	Yes: 1 No: 6

#### RECREATIONAL USER SURVEY FORM

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Parking lot gets ripped up often.

##### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Viewing Wildlife/Birdwatching

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

---

### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 3

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Overgrown grass in fishing area.

### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 4

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

3

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
Fishing dock would be nice.

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
Less rocky/rough paths.

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Fishing pier would be nice.

### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 5

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

4

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Metal detecting

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

5

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Add garbage cans

### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 6

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Entrance needs some grading. Some added space to turn around by the launch would be nice.

### SYLVAN DAM BOAT ACCESS & FISHING AREA: SURVEY 7

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

4

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Restrooms would be nice. Lots of garbage.

# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Sylvan

### Sylvan Dam Boat Access & Fishing Area

#### GENERAL

<b>SURVEYOR NAME</b> Austin Johnson	<b>DATE</b> 2024-08-31	<b>TIME</b> 14:07
<b>PROJECT</b> Sylvan	<b>SITE NAME</b> Sylvan Dam Boat Access & Fishing Area	<b>LOCATION</b> 46.30401135892263, -94.3759464752808
<b>SITE TYPE</b> <input checked="" type="checkbox"/> Boat Launch Area <input type="checkbox"/> Campsite <input checked="" type="checkbox"/> Fishing Area <input type="checkbox"/> Picnic Area <input type="checkbox"/> Trail <input type="checkbox"/> Other:	<b>EVIDENCE OF USE AT SITE</b> <input checked="" type="checkbox"/> Compaction <input checked="" type="checkbox"/> Erosion <input checked="" type="checkbox"/> Litter <input type="checkbox"/> Unauthorized Improvements <input checked="" type="checkbox"/> Vandalism <input type="checkbox"/> Other:	<b>EVIDENCE OF OVERCROWDING</b> <input type="checkbox"/> Anecdotal Information <input type="checkbox"/> Improper Parking <input type="checkbox"/> Site Degradation <input type="checkbox"/> Unauthorized sites <input type="checkbox"/> Waiting Lines <input type="checkbox"/> Other:
<b>AMENITIES AT SITE</b> <input type="checkbox"/> Restrooms <input checked="" type="checkbox"/> Fishing Pier/Platform <input checked="" type="checkbox"/> Boat Launch <input type="checkbox"/> Boat Dock <input checked="" type="checkbox"/> Pedestrian Trail <input type="checkbox"/> Firepit/ring <input type="checkbox"/> Information Kiosk <input checked="" type="checkbox"/> Informational Signage <input checked="" type="checkbox"/> Safety Signage <input type="checkbox"/> Campsite (Primitive) <input type="checkbox"/> Campsite (Improved)		

#### GENERAL NOTES

The parking areas have significant ruts and depressions and the stairs below the west parking lot have an approximately 3 foot drop off at the bottom.

#### PHOTOS



Date: 2024-12-19  
Location: 46.3050°, -94.3766°  
Description: Access road above parking area

## GENERAL PHOTOS (CONTINUED)

---



Date: 2024-12-19  
Location: 46.3036°, -94.3764°  
Description: Boat launch



Date: 2024-12-19  
Location: 46.3044°, -94.3761°  
Description: East parking area



Date: 2024-12-19  
Location: 46.3040°, -94.3758°  
Description: East parking area

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3040°, -94.3759°  
Description: Stairs from parking area to boat launch



Date: 2024-12-19  
Location: 46.3046°, -94.3769°  
Description: Stairs to fishing area



Date: 2024-12-19  
Location: 46.3046°, -94.3769°  
Description: Stairs to fishing area

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3047°, -94.3768°  
Description: West parking lot



Date: 2024-12-19  
Location: 46.3044°, -94.3765°  
Description: West parking lot

## EROSION OBSERVATIONS

ARE THERE AREAS OF NOTICEABLE EROSION, SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

### EROSION DESCRIPTION

Erosion in the parking lot areas. Likely from people doing doughnuts. One on west side that is a drainage issue.

## PHOTOS



Date: 2024-08-31  
Location: 46.3042°, -94.3762°  
Description: East parking area



Date: 2024-08-31  
Location: 46.3042°, -94.3761°  
Description: Large ruts and depressions within the parking lot

## EROSION PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3041°, -94.3759°  
Description: Large ruts and depressions within the parking lot



Date: 2024-08-31  
Location: 46.3046°, -94.3769°  
Description: West parking area erosion coming from the parking lot

## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE  
1

NUMBER OF LANES ON ACCESS ROADS  
2

ROAD CONDITION  
M = Needs maintenance (Facility needs maintenance, such as cleaning or painting)

### ROAD CONDITION NOTES

Some significant potholes along the entrance road.

## PHOTOS



Date: 2024-08-31  
Location: 46.3042°, -94.3760°  
Description: Access road down to the boat launch



Date: 2024-08-31  
Location: 46.3042°, -94.3760°  
Description: Access road above parking areas

## ACCESS ROAD PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3042°, -94.3760°  
Description: Access road down to the boat launch



Date: 2024-08-31  
Location: 46.3047°, -94.3764°  
Description: Access road above parking areas



Date: 2024-08-31  
Location: 46.3050°, -94.3766°  
Description: Access road above parking areas

**ACCESS ROAD PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3055°, -94.3771°  
Description: Access road above the dam

## PARKING AREA OBSERVATIONS

PARKING AREA CONDITION  
M - Needs maintenance

PARKING CONDITION NOTES  
There is a lot of rutting and depressions.

NUMBER OF DESIGNATED HANDICAP SPACES  
0

IS THERE SIGNAGE DELINEATING HANDICAP SPACES?  
 Yes  No

NUMBER OF REGULAR SPACES  
10

NUMBER OF VEHICLE & TRAILER SPACES  
10

## PHOTOS



Date: 2024-08-31  
Location: 46.3040°, -94.3758°  
Description: East parking area



Date: 2024-08-31  
Location: 46.3041°, -94.3756°  
Description: East parking area

## PARKING PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3044°, -94.3761°  
Description: East parking area



Date: 2024-08-31  
Location: 46.3042°, -94.3762°  
Description: East parking area



Date: 2024-08-31  
Location: 46.3044°, -94.3765°  
Description: West parking area

**PARKING PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3047°, -94.3768°  
Description: West parking area



Date: 2024-08-31  
Location: 46.3046°, -94.3770°  
Description: West parking area

## FISHING PIER/PLATFORM OBSERVATIONS

### FISHING PIER OR PLATFORM ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_FP-1

### FISHING PIER CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### FISHING PIER CONDITION NOTES

There is a shore fishing area at the bottom of the pedestrian trail stairs on the northwest section of the site, just below the dam. The fishing area is mostly rocky with some easily walkable shoreline near the stairs.

## PHOTOS



Date: 2025-01-28  
Location: 46.3044°, -94.3770°  
Description: Bottom of stairs to fishing area.  
Photo Type: FP



Date: 2025-01-28  
Location: 46.3046°, -94.3771°  
Description: Bottom of pedestrian trail to fishing area.  
Photo Type: FP

## BOAT LAUNCH OBSERVATIONS

### BOAT LAUNCH ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_BL-1

### BOAT LAUNCH SURFACE

- Hard Surface
- Gravel
- Unimproved (informal)

### BOAT LAUNCH CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### NUMBER OF LANES ON BOAT LAUNCH

1

### BOAT LAUNCH NOTES

Some minor erosion around the launch.

## PHOTOS



Date: 2024-08-31  
Location: 46.3037°, -94.3765°  
Description: Boat launch  
Photo Type: BL



Date: 2024-08-31  
Location: 46.3036°, -94.3764°  
Description: Boat launch  
Photo Type: BL

## BOAT LAUNCH PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3038°, -94.3763°  
Description: Boat launch  
Photo Type: BL



Date: 2024-08-31  
Location: 46.3038°, -94.3763°  
Description: Boat launch staging area.  
Photo Type: BL

## PEDESTRIAN TRAIL OBSERVATIONS

### PEDESTRIAN TRAIL ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_PT-1

### PEDESTRIAN TRAIL CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### PEDESTRIAN TRAIL CONDITION NOTES

There is a large gap at the bottom of the west side parking area stairs.

## PHOTOS



Date: 2024-08-31  
Location: 46.3046°, -94.3769°  
Description: West parking lot stairs to fishing area.  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3046°, -94.3769°  
Description: West parking lot stairs to fishing area.  
Photo Type: PT

## PEDESTRIAN TRAIL PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3046°, -94.3769°  
Description: West parking lot path to fishing area.  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3046°, -94.3771°  
Description: West parking lot path the fishing area.  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3046°, -94.3770°  
Description: West parking lot stairs to fishing area.  
Photo Type: PT

## PEDESTRIAN TRAIL PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3044°, -94.3770°  
Description: West parking lot stairs to fishing area bottom.  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3040°, -94.3759°  
Description: East parking lot stairs to boat launch.  
Photo Type: PT

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_IS-2

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

The sign appears to have been shot, and portions are unreadable

## PHOTOS



Date: 2024-12-19

Location: 46.3043°, -94.3760°

Description: Entrance Sign with Bullet Holes

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_IS-3

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3037°, -94.3764°  
Description: Invasive species sign  
Photo Type: IS



Date: 2024-12-20  
Location: 46.3037°, -94.3765°  
Description: Invasive species sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_IS-4

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3044°, -94.3763°  
Description: Launch access rules  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_IS-5

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20

Location: 46.3046°, -94.3769°

Description: Aquatic hitchhiker and access rules sign

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_IS-6

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3037°, -94.3764°  
Description: Boat launch rules  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_IS-7

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20

Location: 46.3041°, -94.3765°

Description: No motorized vehicles sign

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing Area\_IS-8

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3040°, -94.3764°  
Description: Stop aquatic hitchhikers  
Photo Type: IS



Date: 2024-12-20  
Location: 46.3039°, -94.3764°  
Description: Stop aquatic hitchhikers  
Photo Type: IS

## SAFETY SIGNAGE OBSERVATIONS

### SAFETY SIGN ID

Sylvan\_Sylvan Dam Boat Access & Fishing  
Area\_SS-1

### SAFETY SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SAFETY SIGNAGE CONDITION NOTES

There is some minor vandalism on this sign.

## PHOTOS



Date: 2024-08-31

Location: 46.3046°, -94.3770°

Description: Danger sign with minor vandalism

Photo Type: SS



## ***Sylvan Canoe Portage***

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Sylvan Canoe Portage

## BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-05-26

START TIME  
12:06

END TIME  
14:00

PROJECT  
Sylvan

SITE NAME  
Sylvan Canoe Portage

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Partly Cloudy, Sunny

TEMPERATURE  
63

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

The site is in overall good condition. The parking area is limited and a lot of poison ivy noted throughout site.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Sylvan Canoe Portage

## BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-06-11

START TIME  
07:52

END TIME  
09:52

PROJECT  
Sylvan

SITE NAME  
Sylvan Canoe Portage

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Partly Cloudy

TEMPERATURE  
63

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

No visitors seen using the canoe portage.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Sylvan Canoe Portage

## BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-06-22

START TIME  
14:05

END TIME  
16:03

PROJECT  
Sylvan

SITE NAME  
Sylvan Canoe Portage

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Light Rain

TEMPERATURE  
65

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

No visitors using the canoe portage

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Sylvan Canoe Portage

## BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-07-04

START TIME  
14:02

END TIME  
16:02

PROJECT  
Sylvan

SITE NAME  
Sylvan Canoe Portage

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Light Rain, Partly Cloudy

TEMPERATURE  
73

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

No visitors observed at the canoe portage

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Sylvan Canoe Portage

## BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-07-25

START TIME  
14:07

END TIME  
16:07

PROJECT  
Sylvan

SITE NAME  
Sylvan Canoe Portage

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
80

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

I counted seven vehicles enter the site to go to the boat launch/fishing area while monitoring the portage.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Sylvan Canoe Portage

## BACKGROUND

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OBSERVER NAME  
Austin Johnson

DATE  
2024-08-13

START TIME  
08:38

END TIME  
10:38

PROJECT  
Sylvan

SITE NAME  
Sylvan Canoe Portage

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
65

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

Observed while observing the boat launch and fishing areas.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Sylvan Canoe Portage

## BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-08-31

START TIME  
13:55

END TIME  
15:55

PROJECT  
Sylvan

SITE NAME  
Sylvan Canoe Portage

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
80

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

Observed while observing the boat launch and fishing area.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

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# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Sylvan

### Sylvan Canoe Portage

#### GENERAL

<b>SURVEYOR NAME</b> Austin Johnson	<b>DATE</b> 2024-08-31	<b>TIME</b> 14:43
<b>PROJECT</b> Sylvan	<b>SITE NAME</b> Sylvan Canoe Portage	<b>LOCATION</b> 46.30575278312555, -94.37744985343365
<b>SITE TYPE</b> <input checked="" type="checkbox"/> Boat Launch Area <input type="checkbox"/> Campsite <input type="checkbox"/> Fishing Area <input type="checkbox"/> Picnic Area <input checked="" type="checkbox"/> Trail <input type="checkbox"/> Other:	<b>EVIDENCE OF USE AT SITE</b> <input type="checkbox"/> Compaction <input type="checkbox"/> Erosion <input checked="" type="checkbox"/> Litter <input type="checkbox"/> Unauthorized Improvements <input type="checkbox"/> Vandalism <input type="checkbox"/> Other:	<b>EVIDENCE OF OVERCROWDING</b> <input type="checkbox"/> Anecdotal Information <input type="checkbox"/> Improper Parking <input type="checkbox"/> Site Degradation <input type="checkbox"/> Unauthorized sites <input type="checkbox"/> Waiting Lines <input type="checkbox"/> Other:
<b>AMENITIES AT SITE</b> <input type="checkbox"/> Restrooms <input type="checkbox"/> Fishing Pier/Platform <input checked="" type="checkbox"/> Boat Launch <input type="checkbox"/> Boat Dock <input checked="" type="checkbox"/> Pedestrian Trail <input type="checkbox"/> Firepit/ring <input type="checkbox"/> Information Kiosk <input checked="" type="checkbox"/> Informational Signage <input type="checkbox"/> Safety Signage <input type="checkbox"/> Campsite (Primitive) <input type="checkbox"/> Campsite (Improved)		

#### GENERAL NOTES

See the sylvan boat launch and fishing area observations for spot counts.

#### PHOTOS



Date: 2024-12-19  
Location: 46.3058°, -94.3773°  
Description: Access road

## GENERAL PHOTOS (CONTINUED)

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Date: 2024-12-19  
Location: 46.3068°, -94.3781°  
Description: Canoe landing



Date: 2024-12-19  
Location: 46.3059°, -94.3774°  
Description: Parking area (informal)



Date: 2024-12-19  
Location: 46.3064°, -94.3779°  
Description: Portage trail

## GENERAL PHOTOS (CONTINUED)

---



Date: 2024-12-19  
Location: 46.3060°, -94.3774°  
Description: Portage trail

## EROSION OBSERVATIONS

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ARE THERE AREAS OF NOTICEABLE EROSION,  
SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

EROSION DESCRIPTION

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## PHOTOS

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## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE  
1

NUMBER OF LANES ON ACCESS ROADS  
2

ROAD CONDITION  
M = Needs maintenance (Facility needs maintenance, such as cleaning or painting)

### ROAD CONDITION NOTES

The access road has significant ruts and potholes.

## PHOTOS



Date: 2024-08-31  
Location: 46.3058°, -94.3773°  
Description: Access road above the dam



Date: 2024-08-31  
Location: 46.3058°, -94.3773°  
Description: Access road above the dam

**ACCESS ROAD PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3056°, -94.3772°  
Description: Rebar rod sticking out of the ground along the access road above substation



Date: 2024-12-19  
Location: 46.3056°, -94.3772°  
Description: Rebar rod sticking out of the ground along the access road above substation

**PARKING AREA OBSERVATIONS**

---

PARKING AREA CONDITION	PARKING CONDITION NOTES	NUMBER OF DESIGNATED HANDICAP SPACES
---	---	---
IS THERE SIGNAGE DELINEATING HANDICAP SPACES? <input type="checkbox"/> Yes <input type="checkbox"/> No	NUMBER OF REGULAR SPACES	NUMBER OF VEHICLE & TRAILER SPACES
	---	---

**PHOTOS**

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## BOAT LAUNCH OBSERVATIONS

BOAT LAUNCH ID

Sylvan\_Sylvan Canoe Portage\_BL-1

BOAT LAUNCH SURFACE

- Hard Surface
- Gravel
- Unimproved (informal)

BOAT LAUNCH CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

NUMBER OF LANES ON BOAT LAUNCH

1

BOAT LAUNCH NOTES

Boat launch upstream of the dam

## PHOTOS



Date: 2024-08-31  
Location: 46.3068°, -94.3781°  
Description: Boat launch  
Photo Type: BL



Date: 2024-08-31  
Location: 46.3068°, -94.3782°  
Description: Boat launch area  
Photo Type: BL

## BOAT LAUNCH PHOTOS (CONTINUED)

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Date: 2024-08-31  
Location: 46.3068°, -94.3782°  
Description: Boat launch  
Photo Type: BL

## PEDESTRIAN TRAIL OBSERVATIONS

### PEDESTRIAN TRAIL ID

Sylvan\_Sylvan Canoe Portage\_PT-1

### PEDESTRIAN TRAIL CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### PEDESTRIAN TRAIL CONDITION NOTES

The trail is starting to get overgrown.

## PHOTOS



Date: 2024-08-31  
Location: 46.3060°, -94.3774°  
Description: Portage Trail  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3064°, -94.3777°  
Description: Portage Trail  
Photo Type: PT

**PEDESTRIAN TRAIL PHOTOS (CONTINUED)**

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Date: 2024-08-31  
Location: 46.3064°, -94.3779°  
Description: Portage Trail  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3065°, -94.3780°  
Description: Portage Trail  
Photo Type: PT

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Sylvan\_Sylvan Canoe Portage\_IS-1

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

---

## PHOTOS

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Date: 2024-08-31  
Location: 46.3059°, -94.3775°  
Description: No camping sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Sylvan\_Sylvan Canoe Portage\_IS-2

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

---

## PHOTOS

---



Date: 2024-08-31  
Location: 46.3068°, -94.3782°  
Description: Portage shore marker  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Sylvan\_Sylvan Canoe Portage\_IS-3

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

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## PHOTOS

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Date: 2024-12-20  
Location: 46.3063°, -94.3776°  
Description: Portage trail sign  
Photo Type: IS



***Wilder's Landing***

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan  
Wilder's Landing

## BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-05-26	START TIME 08:39
END TIME 10:00	PROJECT Sylvan	SITE NAME Wilder's Landing

## RECREATIONAL OBSERVATION FORM

WEATHER Partly Cloudy	TEMPERATURE 59	NUMBER OF PEOPLE OBSERVED 4	NUMBER OF VEHICLES OBSERVED 2
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### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

### NOTES

The site is in overall good condition. Litter noted along woods line.

## SURVEY SUMMARY

### Primary Activities by Type

Fishing from a boat:

2

AVERAGE SITE UTILIZATION 5	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION 3.5	SAFETY CONCERNS TALLY Yes: 0 No: 2
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## RECREATIONAL USER SURVEY FORM

### WILDER'S LANDING: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from a boat	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 5
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 3	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

The site gets overcrowded in the summer. Kids come to party at this site on weekends. No garbage can on site. The road has rutting and parking area could use grading. The plow truck in the winter uses site as a turn around and causes rutting.

### WILDER'S LANDING: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from a boat	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 5
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Even with the site being overcrowded at times, it is a good size landing. Keeping the landing small keeps the traffic slower. Improvements would bring more people and the locals like it just the way it is.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Wilder's Landing

## BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-06-11	START TIME 12:21
END TIME 14:21	PROJECT Sylvan	SITE NAME Wilder's Landing

## RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 76	NUMBER OF PEOPLE OBSERVED 4	NUMBER OF VEHICLES OBSERVED 1
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### OBSERVED ACTIVITIES

Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

### NOTES

Locals. Site could use a garbage can.

## SURVEY SUMMARY

### Primary Activities by Type

Motorized boating:

1

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 1 No: 0	AVERAGE CONDITION 4	SAFETY CONCERNS TALLY Yes: 0 No: 1
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## RECREATIONAL USER SURVEY FORM

### WILDER'S LANDING: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 4	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Motorized boating	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

A garbage can on site would be great. Are Atvs allowed? Years ago there was a sign prohibiting Atvs. The sign is no longer up. I use my Atv to bring my boat to the launch. I live right down the road.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Wilder's Landing

## BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-06-22	START TIME 10:15
END TIME 12:15	PROJECT Sylvan	SITE NAME Wilder's Landing

## RECREATIONAL OBSERVATION FORM

WEATHER Cloudy	TEMPERATURE 64	NUMBER OF PEOPLE OBSERVED 2	NUMBER OF VEHICLES OBSERVED 0
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### OBSERVED ACTIVITIES

Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

### NOTES

I spoke with two locals on a walk.

## SURVEY SUMMARY

### Primary Activities by Type

Hiking/Walking/Jogging:

1

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 1 No: 0	AVERAGE CONDITION 4	SAFETY CONCERNS TALLY Yes: 0 No: 1
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## RECREATIONAL USER SURVEY FORM

### WILDER'S LANDING: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Hiking/Walking/Jogging	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

I would love to see a garbage can. Beautiful spot to walk daily.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan  
Wilder's Landing

## BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-07-04	START TIME 07:50
END TIME 09:50	PROJECT Sylvan	SITE NAME Wilder's Landing

## RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 70	NUMBER OF PEOPLE OBSERVED 3	NUMBER OF VEHICLES OBSERVED 1
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### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

### NOTES

The site was not very busy at the time of survey; however, the locals expected it to be busy this afternoon for the 4th of July. This site is utilized by a lot locals taking walks.

## SURVEY SUMMARY

### Primary Activities by Type

Viewing Wildlife/Birdwatching: 1

Hiking/Walking/Jogging: 1

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 1 No: 1	AVERAGE CONDITION 4	SAFETY CONCERNS TALLY Yes: 0 No: 2
-------------------------------	--	------------------------	---------------------------------------

## RECREATIONAL USER SURVEY FORM

### WILDER'S LANDING: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Viewing Wildlife/Birdwatching	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Great place to come have morning coffee.

### WILDER'S LANDING: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Hiking/Walking/Jogging	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: A dock would be very useful at this site. Many people come at night to bowfish. A lamp post would be of a lot of use as well.
--	---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
---	--

CONDITION OF THIS SITE?

4

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

A lamp post and a dock. Great spot to bow fish and would be great to have a dock.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Wilder's Landing

## BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-07-25

START TIME  
07:48

END TIME  
09:48

PROJECT  
Sylvan

SITE NAME  
Wilder's Landing

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
61

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

May have been lack of traffic due to being early in the morning.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan

Wilder's Landing

## BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-08-13	START TIME 12:55
END TIME 14:55	PROJECT Sylvan	SITE NAME Wilder's Landing

## RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 75	NUMBER OF PEOPLE OBSERVED 1	NUMBER OF VEHICLES OBSERVED 1
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### OBSERVED ACTIVITIES

Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

### NOTES

One gentleman was coming back from fishing on the river.

## SURVEY SUMMARY

### Primary Activities by Type

Fishing from a boat:

1

AVERAGE SITE UTILIZATION 1	SUFFICIENT OPPORTUNITIES TALLY Yes: 1 No: 0	AVERAGE CONDITION 5	SAFETY CONCERNS TALLY Yes: 0 No: 1
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## RECREATIONAL USER SURVEY FORM

### WILDER'S LANDING: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from a boat	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 1
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 5	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
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# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Sylvan  
Wilder's Landing

## BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-08-31	START TIME 11:27
END TIME 13:27	PROJECT Sylvan	SITE NAME Wilder's Landing

## RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 75	NUMBER OF PEOPLE OBSERVED 23	NUMBER OF VEHICLES OBSERVED 13
------------------	-------------------	---------------------------------	-----------------------------------

### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

### NOTES

Multiple people noted how this is the busiest the site has been all summer. Multiple mentioned wanting to see a dock here. One group came and jumped on another boat on the river. I didn't get to ask them questions.

## SURVEY SUMMARY

### Primary Activities by Type

Fishing from a boat:

3

Motorized boating:

2

AVERAGE SITE UTILIZATION 2.6	SUFFICIENT OPPORTUNITIES TALLY Yes: 5 No: 0	AVERAGE CONDITION 4.8	SAFETY CONCERNS TALLY Yes: 0 No: 5
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## RECREATIONAL USER SURVEY FORM

### WILDER'S LANDING: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Motorized boating	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 2
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 5	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Adding a boat launch. Noted some dog poop.

### WILDER'S LANDING: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 5	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from a boat	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
---	--

CONDITION OF THIS SITE?

4

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN: ---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Would like to see the parking lot graded every now and then.

WILDER'S LANDING: SURVEY 3

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

4

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN: ---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN: ---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Would love to see a dock, especially for elderly.

WILDER'S LANDING: SURVEY 4

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

3

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Motorized boating

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN: ---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN: ---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Would love a dock.

WILDER'S LANDING: SURVEY 5

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

6

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN: ---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN: ---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

A dock would be nice.

# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Sylvan

### Wilder's Landing

#### GENERAL

SURVEYOR NAME  
Austin Johnson

DATE  
2024-08-31

TIME  
11:28

PROJECT  
Sylvan

SITE NAME  
Wilder's Landing

LOCATION  
46.32570863045492, -94.41048422724057

SITE TYPE  
 Boat Launch Area  
 Campsite  
 Fishing Area  
 Picnic Area  
 Trail  
 Other:

EVIDENCE OF USE AT SITE  
 Compaction  
 Erosion  
 Litter  
 Unauthorized Improvements  
 Vandalism  
 Other:

EVIDENCE OF OVERCROWDING  
 Anecdotal Information  
 Improper Parking  
 Site Degradation  
 Unauthorized sites  
 Waiting Lines  
 Other:

#### AMENITIES AT SITE

Restrooms  Fishing Pier/Platform  Boat Launch  Boat Dock  Pedestrian Trail  Firepit/ring  Information Kiosk  
 Informational Signage  Safety Signage  Campsite (Primitive)  Campsite (Improved)

#### GENERAL NOTES

The site is in overall decent condition. The noted handicap sign falling from the post and parking lot grading are the main concerns.

#### PHOTOS



Date: 2024-12-19  
Location: 46.3266°, -94.4115°  
Description: Access road

## GENERAL PHOTOS (CONTINUED)

---



Date: 2024-12-19  
Location: 46.3259°, -94.4114°  
Description: Access road



Date: 2024-12-19  
Location: 46.3254°, -94.4105°  
Description: Boat launch



Date: 2024-12-19  
Location: 46.3257°, -94.4111°  
Description: Parking area

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3256°, -94.4109°  
Description: Parking area

## EROSION OBSERVATIONS

ARE THERE AREAS OF NOTICEABLE EROSION, SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

EROSION DESCRIPTION

Mostly minor rill erosion noticed in several places.

## PHOTOS



Date: 2024-08-31  
Location: 46.3257°, -94.4105°  
Description: Minor rill erosion



Date: 2024-08-31  
Location: 46.3253°, -94.4105°  
Description: Erosion leading down to the boat launch.

## EROSION PHOTOS (CONTINUED)

---



Date: 2024-08-31

Location: 46.3254°, -94.4106°

Description: Erosion leading down to the boat launch.

## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE  
1

NUMBER OF LANES ON ACCESS ROADS  
2

ROAD CONDITION  
G = Good condition (Facility is functional and well maintained)

ROAD CONDITION NOTES

---

## PHOTOS



Date: 2024-08-31  
Location: 46.3255°, -94.4108°  
Description: Access road from the parking lot.



Date: 2024-08-31  
Location: 46.3257°, -94.4111°  
Description: Access road split to the north of the parking area.

ACCESS ROAD PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3257°, -94.4111°  
Description: Access road



Date: 2024-08-31  
Location: 46.3259°, -94.4114°  
Description: Access road



Date: 2024-08-31  
Location: 46.3266°, -94.4115°  
Description: Access road from pavement to gravel.

## PARKING AREA OBSERVATIONS

PARKING AREA CONDITION

G - Good condition

PARKING CONDITION NOTES

---

NUMBER OF DESIGNATED HANDICAP SPACES

2

IS THERE SIGNAGE DELINEATING HANDICAP SPACES?

Yes  No

NUMBER OF REGULAR SPACES

8

NUMBER OF VEHICLE & TRAILER SPACES

7

## PHOTOS



Date: 2024-08-31  
Location: 46.3257°, -94.4106°  
Description: Parking area



Date: 2024-08-31  
Location: 46.3256°, -94.4109°  
Description: Parking area

**PARKING PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3254°, -94.4105°  
Description: Parking area



Date: 2024-08-31  
Location: 46.3254°, -94.4105°  
Description: Handicap parking signs



Date: 2024-08-31  
Location: 46.3255°, -94.4104°  
Description: Handicap parking signs, falling down

## BOAT LAUNCH OBSERVATIONS

### BOAT LAUNCH ID

Sylvan\_Wilder's Landing\_BL-1

### BOAT LAUNCH SURFACE

- Hard Surface
- Gravel
- Unimproved (informal)

### BOAT LAUNCH CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### NUMBER OF LANES ON BOAT LAUNCH

1

### BOAT LAUNCH NOTES

Some minor erosion going down to the launch.

## PHOTOS



Date: 2024-08-31  
Location: 46.3254°, -94.4105°  
Description: Boat launch  
Photo Type: BL



Date: 2024-08-31  
Location: 46.3253°, -94.4104°  
Description: Boat launch  
Photo Type: BL

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Wilder's Landing\_IS-1

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-08-31  
Location: 46.3254°, -94.4104°  
Description: Aquatic hitchhiker sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Wilder's Landing\_IS-2

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

Slightly overgrown

## PHOTOS



Date: 2024-12-20  
Location: 46.3253°, -94.4105°  
Description: Invasive species sign  
Photo Type: IS



Date: 2024-12-20  
Location: 46.3252°, -94.4105°  
Description: Invasive species sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Wilder's Landing\_IS-3

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other: Entrance Sign

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20

Location: 46.3258°, -94.4113°

Description: Boat landing entrance sign

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Sylvan\_Wilder's Landing\_IS-4

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

Slightly overgrown

## PHOTOS

---



Date: 2024-12-20  
Location: 46.3253°, -94.4105°  
Description: Boat launch info signs  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Wilder's Landing\_IS-5

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other: Handicap parking

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

One side of the sign is falling down

## PHOTOS



Date: 2025-01-28  
Location: 46.3255°, -94.4104°  
Description: Handicap sign  
Photo Type: IS



Date: 2025-01-28  
Location: 46.3254°, -94.4105°  
Description: Handicap sign  
Photo Type: IS



***Fisherman's Bridge Boat Launch and Fishing Area***

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-05-26	START TIME 14:15
END TIME 16:01	PROJECT Sylvan	SITE NAME Fisherman's Bridge Boat Launch & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Partly Cloudy, Sunny	TEMPERATURE 64	NUMBER OF PEOPLE OBSERVED 16	NUMBER OF VEHICLES OBSERVED 6
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

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#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

5

AVERAGE SITE UTILIZATION 4	SUFFICIENT OPPORTUNITIES TALLY Yes: 5 No: 0	AVERAGE CONDITION 4.4	SAFETY CONCERNS TALLY Yes: 0 No: 5
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#### RECREATIONAL USER SURVEY FORM

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 4	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 4
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
No

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 3	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 4
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 5	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
---

### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 3

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
3

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
5

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
A restroom

### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 4

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
I found this fishing area on google maps. Great place!

### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 5

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
4

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Great place to fish. Parking can get overcrowded at times.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-06-11	START TIME 10:15
END TIME 12:15	PROJECT Sylvan	SITE NAME Fisherman's Bridge Boat Launch & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Partly Cloudy	TEMPERATURE 64	NUMBER OF PEOPLE OBSERVED 1	NUMBER OF VEHICLES OBSERVED 1
--------------------------	-------------------	--------------------------------	----------------------------------

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

The site is in overall great shape.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

1

##### AVERAGE SITE UTILIZATION

---

##### SUFFICIENT OPPORTUNITIES TALLY

Yes: 1 No: 0

##### AVERAGE CONDITION

4

##### SAFETY CONCERNS TALLY

Yes: 1 No: 0

#### RECREATIONAL USER SURVEY FORM

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:

The step onto the pier is hard for elderly to access. One side has a ramp and the other doesn't. Person surveyed witnessed an elderly man fall last summer and thinks it would be helpful to have a ramp on both sides.

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Wonderful place to fish.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### BACKGROUND

OBSERVER NAME	DATE	START TIME
Amanda Carlson	2024-06-23	12:15
END TIME	PROJECT	SITE NAME
14:21	Sylvan	Fisherman's Bridge Boat Launch & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER	TEMPERATURE	NUMBER OF PEOPLE OBSERVED	NUMBER OF VEHICLES OBSERVED
Sunny	78	8	4

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

Observed people shorefishing and several people drove by on boats.

#### SURVEY SUMMARY

##### Primary Activities by Type

Motorized boating:

1

Fishing from the shore:

1

AVERAGE SITE UTILIZATION	SUFFICIENT OPPORTUNITIES TALLY	AVERAGE CONDITION	SAFETY CONCERNS TALLY
3	Yes: 2 No: 0	3.5	Yes: 1 No: 1

#### RECREATIONAL USER SURVEY FORM

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

4

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Motorized boating

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:

The step onto the bridge on the north side is tough for the elderly who fish here.

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Good fishing. No garbage can.

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 2

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INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

CONDITION OF THIS SITE?

3

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
SITE? ---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Great place to fish.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-07-04	START TIME 10:00
END TIME 12:00	PROJECT Sylvan	SITE NAME Fisherman's Bridge Boat Launch & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Partly Cloudy	TEMPERATURE 73	NUMBER OF PEOPLE OBSERVED 5	NUMBER OF VEHICLES OBSERVED 3
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

---

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

3

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 3 No: 0	AVERAGE CONDITION 3	SAFETY CONCERNS TALLY Yes: 1 No: 2
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#### RECREATIONAL USER SURVEY FORM

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 3	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: The step onto the pier on the north side of the bridge.
--	--

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

The north side of the fishing area could use some improvement. The step onto the pier is tough for older people. It's hard to retrieve fish from the shore area because of the unstable rock.

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 3	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

A garbage can onsite would be very useful. The site is often left littered. The pier on the north side could use improvement. My wife with MS can not access because of the step being eroded.

### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 3

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:

---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

A garbage can onsite. Great place to fish, I've been coming here for many years.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### BACKGROUND

OBSERVER NAME	DATE	START TIME
Austin Johnson	2024-07-25	09:56
END TIME	PROJECT	SITE NAME
11:57	Sylvan	Fisherman's Bridge Boat Launch & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER	TEMPERATURE	NUMBER OF PEOPLE OBSERVED	NUMBER OF VEHICLES OBSERVED
Sunny	70	9	5

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other: Parked in lot

##### NOTES

One group didn't want to be surveyed. One said he lives just down the road and sees people jumping from the bridge regularly and climbing over the fence. Signs also are knocked down often. 2 vehicles in and out.

Over at the boat launch, there was one MN power truck, and no other noticeable activity I could see from the bridge.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

2

:

1

AVERAGE SITE UTILIZATION  
3.6666666666666665

SUFFICIENT OPPORTUNITIES TALLY  
Yes: 3 No: 0

AVERAGE CONDITION  
4

SAFETY CONCERNS TALLY  
Yes: 2 No: 1

#### RECREATIONAL USER SURVEY FORM

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
3

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
4

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
Concern for kids playing on boulders

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Appreciate the handicap accessibility

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Hanging out in parking lot

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
4

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
---

IF NO, PLEASE EXPLAIN:  
---

Yes  No  N/A

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:

Lots of signs getting knocked over and kids jumping off the bridge

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

---

### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 3

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:

---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:

---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:

---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### BACKGROUND

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OBSERVER NAME Austin Johnson	DATE 2024-08-13	START TIME 10:45
END TIME 12:45	PROJECT Sylvan	SITE NAME Fisherman's Bridge Boat Launch & Fishing Area

#### RECREATIONAL OBSERVATION FORM

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WEATHER Sunny	TEMPERATURE 73	NUMBER OF PEOPLE OBSERVED 4	NUMBER OF VEHICLES OBSERVED 2
------------------	-------------------	--------------------------------	----------------------------------

#### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

#### NOTES

Mother and daughter drove in and checked out the water then left. They did not want to fill out a survey. One other group drove in and out.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION ---	SUFFICIENT OPPORTUNITIES TALLY ---	AVERAGE CONDITION ---	SAFETY CONCERNS TALLY ---
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#### RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-08-31	START TIME 09:18
END TIME 11:19	PROJECT Sylvan	SITE NAME Fisherman's Bridge Boat Launch & Fishing Area

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 67	NUMBER OF PEOPLE OBSERVED 11	NUMBER OF VEHICLES OBSERVED 5
------------------	-------------------	---------------------------------	----------------------------------

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

Couldn't catch one group before they left. Another family came in, looked at the water and left.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

3

AVERAGE SITE UTILIZATION  
1.6666666666666667

SUFFICIENT OPPORTUNITIES TALLY  
Yes: 3 No: 0

AVERAGE CONDITION  
4.333333333333333

SAFETY CONCERNS TALLY  
Yes: 0 No: 3

#### RECREATIONAL USER SURVEY FORM

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Adding a handicap restroom. He also would like to see more places like this. He also said a trail from here to the dam would be cool.

##### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
---

### FISHERMAN'S BRIDGE BOAT LAUNCH & FISHING AREA: SURVEY 3

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

1

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

5

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Glad there are places like this around.

# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Sylvan

### Fisherman's Bridge Boat Launch & Fishing Area

#### GENERAL

SURVEYOR NAME  
Austin Johnson

DATE  
2024-08-31

TIME  
09:20

PROJECT  
Sylvan

SITE NAME  
Fisherman's Bridge Boat Launch & Fishing Area

LOCATION  
46.311615531603685, -94.3804329601076

#### SITE TYPE

- Boat Launch Area
- Campsite
- Fishing Area
- Picnic Area
- Trail
- Other:

#### EVIDENCE OF USE AT SITE

- Compaction
- Erosion
- Litter
- Unauthorized Improvements
- Vandalism
- Other:

#### EVIDENCE OF OVERCROWDING

- Anecdotal Information
- Improper Parking
- Site Degradation
- Unauthorized sites
- Waiting Lines
- Other:

#### AMENITIES AT SITE

- Restrooms
- Fishing Pier/Platform
- Boat Launch
- Boat Dock
- Pedestrian Trail
- Firepit/ring
- Information Kiosk
- Informational Signage
- Safety Signage
- Campsite (Primitive)
- Campsite (Improved)

#### GENERAL NOTES

Site is in overall good condition with some minor erosion. Some areas are slightly overgrown. West of the bridge there is an informal canoe launch/water access on the south end of that parking area.

#### PHOTOS



Date: 2024-12-19  
Location: 46.3108°, -94.3836°  
Description: Public Access Boat launch

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3117°, -94.3803°  
Description: East parking area



Date: 2024-12-19  
Location: 46.3117°, -94.3807°  
Description: East parking area



Date: 2024-12-19  
Location: 46.3118°, -94.3818°  
Description: West parking area

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3115°, -94.3837°  
Description: Boat launch parking area



Date: 2024-12-19  
Location: 46.3115°, -94.3839°  
Description: Boat launch parking area



Date: 2024-12-19  
Location: 46.3118°, -94.3810°  
Description: Pedestrian bridge crossing

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3118°, -94.3815°  
Description: Pedestrian bridge crossing



Date: 2025-01-08  
Location: 46.3115°, -94.3820°  
Description: Unimproved Canoe Launch



Date: 2025-01-08  
Location: 46.3115°, -94.3820°  
Description: Unimproved Canoe Launch

## EROSION OBSERVATIONS

---

ARE THERE AREAS OF NOTICEABLE EROSION, SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

### EROSION DESCRIPTION

Erosion around the edge of the northeast side of the bridge and minor erosion in the west parking lot.

## PHOTOS

---



Date: 2024-08-31

Location: 46.3119°, -94.3810°

Description: Erosion on the north east side of the bridge.



Date: 2024-08-31

Location: 46.3118°, -94.3820°

Description: Minor erosion in the west parking lot.

**EROSION PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3109°, -94.3836°  
Description: Boat launch parking lot rutting

## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE  
2

NUMBER OF LANES ON ACCESS ROADS  
2

ROAD CONDITION  
G = Good condition (Facility is functional and well maintained)

ROAD CONDITION NOTES

---

## PHOTOS



Date: 2024-08-31  
Location: 46.3116°, -94.3805°  
Description: East parking lot access road



Date: 2024-08-31  
Location: 46.3117°, -94.3803°  
Description: East parking lot access road

**ACCESS ROAD PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3118°, -94.3818°  
Description: West parking lot access road



Date: 2024-08-31  
Location: 46.3119°, -94.3821°  
Description: West parking lot access road



Date: 2024-12-19  
Location: 46.3124°, -94.3833°  
Description: Boat launch access road

## ACCESS ROAD PHOTOS (CONTINUED)

---



Date: 2024-12-19  
Location: 46.3120°, -94.3835°  
Description: Boat launch access road



Date: 2024-12-19  
Location: 46.3122°, -94.3834°  
Description: Four-wheeler trail crossing boat launch access road

## PARKING AREA OBSERVATIONS

PARKING AREA CONDITION

G - Good condition

PARKING CONDITION NOTES

---

NUMBER OF DESIGNATED HANDICAP SPACES

2

IS THERE SIGNAGE DELINEATING HANDICAP SPACES?

Yes  No

NUMBER OF REGULAR SPACES

20

NUMBER OF VEHICLE & TRAILER SPACES

10

## PHOTOS



Date: 2024-08-31  
Location: 46.3117°, -94.3803°  
Description: East parking area



Date: 2024-08-31  
Location: 46.3116°, -94.3803°  
Description: East parking area

**PARKING PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3117°, -94.3807°  
Description: East parking area



Date: 2024-08-31  
Location: 46.3117°, -94.3807°  
Description: East parking area paved parking spot



Date: 2024-08-31  
Location: 46.3118°, -94.3818°  
Description: West parking area

**PARKING PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3119°, -94.3821°  
Description: West parking area



Date: 2024-12-19  
Location: 46.3115°, -94.3837°  
Description: Boat launch parking lot



Date: 2024-12-19  
Location: 46.3115°, -94.3839°  
Description: Boat launch parking lot

**PARKING PHOTOS (CONTINUED)**

---



Date: 2024-12-19  
Location: 46.3111°, -94.3836°  
Description: Boat launch parking lot



Date: 2024-12-19  
Location: 46.3111°, -94.3836°  
Description: Boat launch parking lot handicap parking



Date: 2024-12-19  
Location: 46.3110°, -94.3839°  
Description: Boat launch parking lot handicap parking

## RESTROOM OBSERVATIONS

### RESTROOM ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_RR-1

### RESTROOM TYPE

- Flushable toilets  
 Portable

### RESTROOM CONDITION

- N - Needs to be replaced  
 R - Needs to be repaired  
 M - Needs maintenance  
 G - Good condition

### RESTROOM CONDITION NOTES

Restroom in good condition

## PHOTOS



Date: 2024-12-19  
Location: 46.3112°, -94.3839°  
Description: Portable restroom  
Photo Type: RR

## FISHING PIER/PLATFORM OBSERVATIONS

### FISHING PIER OR PLATFORM ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_FP-1

### FISHING PIER CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### FISHING PIER CONDITION NOTES

This is a shore fishing area and not a pier/platform fishing area. There is some litter around the fishing area.

## PHOTOS



Date: 2025-01-28  
Location: 46.3117°, -94.3808°  
Description: Designated shore fishing area  
Photo Type: FP



Date: 2025-01-28  
Location: 46.3117°, -94.3808°  
Description: Designated shore fishing area  
Photo Type: FP

## FISHING PIER PHOTOS (CONTINUED)



Date: 2025-01-28  
Location: 46.3118°, -94.3809°  
Description: Designated shore fishing area  
Photo Type: FP



Date: 2025-01-28  
Location: 46.3118°, -94.3815°  
Description: Pedestrian bridge crossing and fishing area  
Photo Type: FP



Date: 2025-01-28  
Location: 46.3118°, -94.3810°  
Description: Pedestrian bridge crossing and fishing area  
Photo Type: FP

**FISHING PIER PHOTOS (CONTINUED)**

---



Date: 2025-01-28  
Location: 46.3119°, -94.3815°  
Description: Pedestrian bridge crossing and fishing area  
Photo Type: FP

## BOAT LAUNCH OBSERVATIONS

### BOAT LAUNCH ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_BL-3

### BOAT LAUNCH SURFACE

- Hard Surface
- Gravel
- Unimproved (informal)

### BOAT LAUNCH CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### NUMBER OF LANES ON BOAT LAUNCH

2

### BOAT LAUNCH NOTES

Both launches appear to be in good condition

## PHOTOS



Date: 2024-12-19  
Location: 46.3108°, -94.3835°  
Description: North launch  
Photo Type: BL



Date: 2024-12-19  
Location: 46.3109°, -94.3836°  
Description: South launch  
Photo Type: BL

## BOAT DOCK OBSERVATIONS

### BOAT DOCK ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_BD-1

### BOAT DOCK TYPE

- Boat Dock (can secure boat to platform)  
 Fishing Pier (cannot secure boat to platform)

### BOAT DOCK CONDITION

- N - Needs to be replaced  
 R - Needs to be repaired  
 M - Needs maintenance  
 G - Good condition

### BOAT DOCK NOTES

---

## PHOTOS



Date: 2024-12-19  
Location: 46.3109°, -94.3835°  
Description: Boat dock  
Photo Type: BD



Date: 2024-12-19  
Location: 46.3108°, -94.3836°  
Description: Boat dock  
Photo Type: BD

## PEDESTRIAN TRAIL OBSERVATIONS

### PEDESTRIAN TRAIL ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_PT-1

### PEDESTRIAN TRAIL CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### PEDESTRIAN TRAIL CONDITION NOTES

Overgrown

## PHOTOS



Date: 2024-08-31  
Location: 46.3117°, -94.3806°  
Description: East side pedestrian trail  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3117°, -94.3810°  
Description: East side stairs from fishing area to bridge  
Photo Type: PT

**PEDESTRIAN TRAIL PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3118°, -94.3810°  
Description: East side stairs from fishing area to bridge  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3118°, -94.3810°  
Description: South side of bridge pedestrian crossing  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3118°, -94.3815°  
Description: Southside of bridge pedestrian crossing  
Photo Type: PT

## PEDESTRIAN TRAIL PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3118°, -94.3815°  
Description: West side of bridge, fishing access path  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3118°, -94.3816°  
Description: West side bridge, fishing access path  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3119°, -94.3815°  
Description: North side of bridge pedestrian crossing  
Photo Type: PT

**PEDESTRIAN TRAIL PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3119°, -94.3809°  
Description: North side of bridge pedestrian crossing  
Photo Type: PT

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-1

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-08-31  
Location: 46.3117°, -94.3806°  
Description: No dumping sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-2

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

Invasive species sign overgrown

## PHOTOS

---



Date: 2024-08-31

Location: 46.3117°, -94.3819°

Description: Invasive species sign, overgrown

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-3

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-19

Location: 46.3116°, -94.3820°

Description: Fisherman's Bridge entry sign

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-4

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

Boat launch signs

## PHOTOS

---



Date: 2024-12-19

Location: 46.3108°, -94.3836°

Description: Aquatic invasive species sign

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-5

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-19

Location: 46.3115°, -94.3837°

Description: Parking area entrance sign

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-6

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3109°, -94.3839°  
Description: Dispose Dump Drain sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-7

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

Overgrown

## PHOTOS

---



Date: 2024-12-20

Location: 46.3115°, -94.3821°

Description: Public waters access sign, overgrown

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-8

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3108°, -94.3836°  
Description: Launch Information signs  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-9

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3124°, -94.3833°  
Description: Public Water Access  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_IS-10

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3122°, -94.3834°  
Description: Road open to sign  
Photo Type: IS

## SAFETY SIGNAGE OBSERVATIONS

SAFETY SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_SS-1

SAFETY SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SAFETY SIGNAGE CONDITION NOTES

Sign is in good condition

## PHOTOS



Date: 2024-08-31  
Location: 46.3118°, -94.3808°  
Description: No diving sign  
Photo Type: SS

## SAFETY SIGNAGE OBSERVATIONS

SAFETY SIGN ID

Sylvan\_Fisherman's Bridge Boat Launch & Fishing Area\_SS-2

SAFETY SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SAFETY SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3119°, -94.3809°  
Description: No Diving from Bridge  
Photo Type: SS

## Appendix H

### Phase I Architectural History Reconnaissance Survey for the Sylvan Hydroelectric Relicensing Project (*Privileged*)

## **Appendix I**

### **Phase I Archaeological Investigation and Conditions Assessment of Archaeological Sites for the Sylvan Hydroelectric Relicensing Project *(Privileged)***

## **Appendix J**

### **Pillager Project Desktop Fish Entrainment and Impingement Study Report**

# DESKTOP FISH ENTRAINMENT AND IMPINGEMENT STUDY REPORT

PILLAGER HYDROELECTRIC PROJECT  
FERC No. 2663

Prepared for:

**Minnesota Power**

Prepared by:

**Kleinschmidt Associates**

January 2025

***Kleinschmidt***

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## 1.0 INTRODUCTION

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ALLETE, Inc, doing business as Minnesota Power (MP), is the Licensee, owner, and operator of the Pillager Hydroelectric Project (FERC No. 2663) (Pillager Project). The Pillager Project is a 1.52-megawatt (MW) run-of-river facility located on the Crow Wing River in Cass, Crow Wing, and Morrison counties, Minnesota. The Federal Energy Regulatory Commission (FERC) license for the Pillager Project expires on March 31, 2028. MP is using the Integrated Licensing Process (ILP) to relicense the Pillager Project.

During study scoping, FERC requested a study to assess the potential for fish entrainment and impingement at the Pillager Project, and the potential effects of entrainment and impingement on local fish communities. MP filed a Proposed Study Plan (PSP) on September 8, 2023, and held a study plan meeting on October 11, 2023. MP subsequently filed a Revised Study Plan (RSP) on January 9, 2024.

This study has been conducted to provide an order-of-magnitude estimate of fish entrainment and impingement at the Pillager Project. Specifically, the goal of this study was to use a desktop analysis to evaluate the potential for fish entrainment and impingement at the powerhouse, estimate fish mortality due to entrainment and impingement, and assess the effect that entrainment and impingement may have on the local fish community. This qualitative risk assessment is commonly used to estimate order-of-magnitude levels of entrainment and impingement as part of the FERC licensing and relicensing processes.

The specific objectives of this Desktop Entrainment and Impingement Study are:

- Describe the physical characteristics of the Pillager Project and document factors that could affect impingement, entrainment, and survival as they relate to project specific parameters;
- Determine target fish species or family groups, and describe factors that influence their vulnerability to impingement, entrainment, and turbine survival;
- Estimate fish impingement, entrainment, and associated mortality rates; and
- Describe potential effects to local fish communities associated with entrainment and impingement.

## 1.1 Pillager Project Description

The Pillager dam forms a 768-acre reservoir on the Crow Wing River. The Pillager Project has two vertical Francis turbines, each with an installed capacity of 760 kilowatt (kW), for a total installed capacity of 1,520 kW. The maximum hydraulic capacity of each turbine is approximately 620 cubic feet per second (cfs), for a maximum powerhouse hydraulic capacity of 1,240 cfs (Table 1-1). The Pillager Project is operated in run-of-river mode, with outflows at the dam approximating inflow. Flow is discharged through the powerhouse under normal flow conditions. When the discharge capacity of the powerhouse is exceeded, flow is discharged through an approximately 357-foot-long gated spillway.

**Table 1-1. Pillager Project Specifications**

Pillager Project Description	Specification
<b>General Information</b>	
Licensed Capacity	1,520 kW
Operation Type	Run-of-river
<b>Powerhouse</b>	
Turbine Generators	Two Vertical Francis Turbines
Installed Capacity of Each Unit	760 kW
Revolutions Per Minute of Each Unit	120
Maximum Hydraulic Capacity of Each Unit	620 cfs
Minimum Hydraulic Capacity of Each Unit	250 cfs
Average Head	20 feet
Intake Width at Each Unit	16.25 feet
Intake Height at Each Unit	18 feet
Trashrack Bar Thickness	0.25 inches
Trashrack Spacing	1.5 inches clear space, 1.75 inches centerline space

## 2.0 METHODS

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Fish impingement and entrainment may occur when fish enter into the intake area during periods of operation and become either impinged on the trashracks (dependent on bar rack spacing and fish size) or become entrained through the trashracks and turbines. As fish pass through a turbine, they can be subjected to pressure changes, shear stress, and mechanical injury. Each of these stresses can influence the survivability of fish passing through a turbine. Fish entrainment (rate and mortality) was historically evaluated through empirical onsite investigation. In this analysis, the results of prior entrainment and turbine mortality field studies were used to approximate the potential impacts to fish entrained at the Pillager Project.

The primary inputs for this desktop analysis were developed through a series of evaluations covering the following steps:

1. Develop a fish entrainment and turbine mortality database that can be applied to the Pillager Project.
2. Estimate fish entrainment rates, defined as number of fish/volume of water entrained.
3. Characterize the species composition of potential fish entrainment.
4. Apply physical or biological filters that may influence entrainment.
5. Estimate impingement mortality for fish excluded from entrainment estimates.
6. Estimate the total annual entrainment for the Pillager Project based on a range of low, normal, and high river flow years.
7. Estimate potential turbine mortality for fish entrainment.

### 2.1 Entrainment Database and Entrainment Rates

Over sixty site-specific studies of resident fish entrainment at hydroelectric projects in the United States have been reported to date, which provide order-of-magnitude estimates of annual fish entrainment (EPRI 1997, FERC 1995). Descriptive information was gathered from available entrainment studies, which include:

- Location: geographic proximity to the Pillager Project
- Project size: discharge capacity and power production
- Project head: head height less than 50 feet

- Mode of operation: e.g., run-of-river, etc.
- Biological factors: similarity of fish species composition

Using these criteria, a list of surrogate studies was developed. To ensure a robust dataset, nine source studies were included in the development of a project specific entrainment rate. The reported annual entrainment rates for each of the sites were averaged to provide an annual entrainment rate for the Pillager Project. Annual entrainment rates were used due to differences in how monthly entrainment rates were calculated in surrogate studies. The annual entrainment rates for projects in Electric Power Research Institute (EPRI) entrainment study databases were reported in fish per hour using 100% of the plant capacity. These hourly entrainment rates were converted to fish per water volume discharged (million cubic feet [MCF]). Entrainment rates expressed as fish per volume of water allow for the comparison of entrainment at different sites despite varying characteristics, such as plant hydraulic capacity. Once an annual entrainment rate was established for each site, the rates were averaged to produce an estimated annual entrainment rate for the Pillager Project.

## **2.2 Estimation of Total Annual Entrainment**

Annual entrainment estimates were developed for the Pillager Project by multiplying the annual entrainment rate by the estimated monthly generation flows. Due to differences in the methods used to calculate monthly entrainment rates for sites within the EPRI databases, annual entrainment (fish per MCF) was applied across all months. Monthly generation flow estimates were derived using mean monthly values from USGS Gage No. 05247500, located on the Crow Wing River near Pillager, MN, for the full calendar years of 1993 through 2023. Mean daily flows were also adjusted to account for the limitations of the powerhouse hydraulic capacity. Flows were limited to the maximum powerhouse flow of 1,240 cfs. Flows in excess of this would pass as spill and were not included in the calculation of generation flows. After calculating the average daily flows that will pass through the powerhouse, monthly flow estimates were calculated by multiplying the average daily powerhouse flows by the number of days in the month. The average monthly flow in cfs was then converted to the volume of water expected to pass through the powerhouse in MCF. The monthly MCF values were summed to calculate the annual volume of water that is expected to be passed through the Pillager Project powerhouse. This approach is conservative and assumes that the project operates at maximum capacity with no turbine outages during the year, which is an operationally unlikely scenario.

Additionally, potential maximum and minimum entrainment estimates were calculated using the monthly minimum and maximum daily average flows that occurred during 1993-2023.

### **2.3 Species Composition**

Site-specific data from the Minnesota Department of Natural Resources (Minnesota DNR) trap netting assessments were used to characterize the Pillager Reservoir (Lake Placid) fish assemblage. Management species of interest include bluegill, walleye, and bass species (Minnesota DNR 2021). Fisheries data collected via trap netting in 2024 were compiled to assess species composition for the reservoir (Minnesota DNR 2024). A total of 32 trap net ( $\frac{3}{4}$ -inch mesh) sets were conducted during April-June 2024. Trap nets with  $\frac{3}{4}$ -inch mesh may not be expected to effectively collect smaller species or individuals, including cyprinids or young-of-year fish, or some species that are more susceptible to capture with other methods, but can provide a useful index of the general reservoir fish assemblage. The empirical source study data used to derive the entrainment rates, however, included all species and size classes collected during their respective studies.

A total of 20 fish species or family groups were documented during the 2024 survey. The most abundant species were pumpkinseed (n=258) and yellow perch (n=184). Fish collected during 2024 Minnesota DNR trap net surveys are described in Table 2-1.

**Table 2-1. Fish Species Collected during Minnesota DNR Trap Netting Surveys**

<b>Species</b>	<b>Total</b>	<b>Minimum Length (in.)</b>	<b>Maximum Length (in.)</b>	<b>Relative Abundance (%)</b>
Black bullhead	149	3.8	12.1	18.2%
Black crappie	41	2.0	14.6	5.0%
Bluegill	37	4.8	9.1	4.5%
Bowfin	12	21.0	26.3	1.5%
Brown bullhead	25	N/A	N/A	3.1%
Creek chub	1	N/A	N/A	0.1%
Greater redhorse	10	10.2	24.2	1.2%
Green sunfish	8	3.7	5.3	1.0%
Hybrid sunfish	14	4.2	7.7	1.7%
Largemouth bass	2	17.6	18.1	0.2%
Northern pike	39	8.7	29.9	4.8%
Pumpkinseed	258	3.3	7.2	31.5%
Rock bass	77	3.6	11.5	9.4%
Shorthead redhorse	9	18.2	24.6	1.1%
Silver redhorse	4	21.8	23.8	0.5%
Tadpole madtom	1	3.1	3.1	0.1%
Walleye	5	20.5	27.6	0.6%
White sucker	4	17.7	18.9	0.5%
Yellow bullhead	22	5.5	5.7	2.7%
Yellow perch	184	4.5	9.9	22.5%
<b>Total</b>	<b>902</b>			<b>100%</b>

Source: Minnesota DNR 2024

## 2.4 Entrainment Screening

Physical and biological filters refer to the physical layout of the project intakes, or biological factors that would influence entrainment. Examples of this include trash rack spacing that prevents fish from entering the intakes, or intake velocities that are lower than fish sustained swim speeds.

The first potential entrainment filter analyzed was the expected approach and through rack velocity of water at the Pillager Project intake. This entrainment filter was calculated

using Pillager Project specific characteristics, including trash rack spacing, intake area, and maximum flow capacity of the Pillager Project’s turbines (Table 2-2). Calculated water velocity was compared to the swimming speeds of potentially entrained fish. Fish swimming speeds were estimated using methods put forth in a United States Fish and Wildlife Service (USFWS) bulletin (USFWS 1989). The bulletin defines a conservative estimate of a fish’s sustained swimming speed as three times its body length. The expected swimming speed of fish at the Pillager Project was calculated using the following equation:

$$\text{Sustained swimming speed (ft/s)} = \text{fish length (ft)} \times 3 \text{ body lengths per second (ft/s)}$$

This information was used to exclude fish that can escape intake flows from the entrainment estimate and provides a more conservative estimate of potential entrainment than use of the faster burst swim speeds. Inclusion of smaller size classes of fish with slower swim speeds mirrors results of empirical in-field studies, where juveniles and smaller adult fish comprise much of the documented entrainment composition, with relatively few larger adults present (EPRI 1997, FERC 1995).

**Table 2-2. Pillager Project Intake and Trashrack Dimensions at Each Unit**

Intake and Trashrack Dimension Data	
Intake Height (ft)	19
Intake Width (ft)	16.25
Intake Area (ft <sup>2</sup> )	309
Trash Rack Clear Bar Spacing (in)	1.5
Track Rack Centerline Bar Spacing (in)	1.75
Trash Rack Bar Thickness (in)	0.25
Bar Percentage	14%
Bar Area (ft <sup>2</sup> )	44.11
Free Area (ft <sup>2</sup> )	264.64
<b>Approach Velocity (fps)</b>	<b>2.01</b>
<b>Through Rack Velocity (fps)</b>	<b>2.34</b>

## 2.5 Fish Impingement

Impingement can occur if a fish is too wide to travel through the trash racks and cannot escape intake inflow. Widths of fish potentially entrained at the Pillager Project were estimated using interorbital width. Interorbital width is the distance between eyes as measured across the head and is roughly equivalent to skull width. The skull is the least compressible part of the fish body and provides a conservative index of what size fish the trashrack may exclude. Interorbital widths were calculated using the relationships of a fish's total length, standard length, and interorbital width as defined in Smith (1985).

## 2.6 Turbine Mortality Rates and Estimation of Fish Mortality

Mortality estimates were calculated using methods defined in Franke et al. (1997). Franke et al. developed equations for calculating the probability that a turbine blade would strike an entrained fish based on Project specific turbine parameters. Table 2-3 describes the specific parameters for the Pillager Project, assuming the plant is operating at maximum hydraulic capacity. The equation used to calculate the blade strike probability for a Francis unit is:

$$P = \lambda * (N * L / D) * (\sin(\alpha * B / D_1) / 2Qw^d) + (\cos(\alpha) / \pi)$$

Where:

- **P** = Probability of strike
- **λ** = Blade strike correlation factor
- **N** = Number of buckets
- **L** = Fish length
- **D** = Diameter of runner
- **B** = Runner height at inlet
- **D<sub>1</sub>** = Diameter of runner at inlet
- **Qw<sup>d</sup>** = Discharge coefficient = (Q / ωD<sup>3</sup>), where Q = max flow and ω = rotational speed
- **α** = Angle to tangential of absolute flow upstream of runner

$$\text{Survival (S)} = 1 - P$$

Mortality rates for each length class were calculated using the longest fish in a length class. For example, all fish within the 0–5-inch length class were assigned the mortality rate calculated for a 5-inch fish. After calculating the mortality rate for each length class, mortality rates were applied to the estimated number of fish entrained annually for each length class. This provided a conservative estimate of annual entrainment mortality.

A correlation factor was utilized to adjust the predictive model results to correspond with documented empirical data. The correlation factor was originally introduced by Von Raben (Bell 1981) to account for the fact that the contact of a fish with a turbine component does not always result in injury or mortality (Bell 1981, Cada 1998). Therefore, Von Raben introduced the correlation factor to adjust the predicted turbine strike results to more closely match empirical results. The correlation factor is necessary because not all strikes lead to death, and not all mortality is due to blade strike. This factor also extends the applicability of these predictive equations to all injury mechanisms related to the variable parameters. Franke et al. (1997) refined the Von Raben model to consider the effect of tangential projection of the fish length on blade strike probability, as a large percentage of entrainment mortality is caused by fish strikes from a turbine blade or some other turbine component. As stated in Franke et al. (1997) *“such mechanisms could include mechanical mechanisms such as leading-edge strike and gap grinding as well as fluid induced mechanisms related to flow through gaps or other flow phenomena associated with blades.”* Based on a substantial number of test results obtained from studies conducted with salmonids on the west coast, Franke et al. (1997) recommends a correlation factor ranging from 0.1 to 0.2. Use of a higher correlation factor results in a lower survival rate. For this assessment, blade strike analyses were run with correlation factors of 0.10, 0.15, and 0.20.

**Table 2-3. Pillager Project Specifications of Two Francis Turbines**

<b>Turbine Characteristics</b>	<b>Generation</b>
Turbine Type:	Francis
RPM:	120
Normal Effective Head (ft):	20
Maximum Hydraulic Capacity (cfs)	620

## 3.0 RESULTS

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### 3.1 Entrainment Database and Entrainment Rates

Using the methods described in Section 2.1, the database of entrainment studies was narrowed to nine sites that are comparable (surrogate) to the Pillager Project. Database sites included in this analysis have similar project characteristics, are located at latitudes similar to the Pillager Project, and/or have similar fish species compositions. The reference sites were located in Michigan and Wisconsin. Database sites used for this analysis were also used for the Sylvan Entrainment and Impingement Study, due to the similar characteristics (size, operation, location within river basin) between the two Projects. Reference sites included in the database were characterized by the presence of warm water and cool water (transitional) species. Numerous species or family groups that were documented by Minnesota DNR trap netting surveys also comprise a large percentage of the fish assemblages documented at reference sites represented in the database.

The Pillager Project entrainment rate was estimated by averaging the results of studies at reference sites identified in the database. If multiple entrainment studies were completed at a reference site, the most complete study was used in this analysis. Table 3-1 contains information on the sites that make up the Pillager Project database and the calculated entrainment rate for the Pillager Project.

**Table 3-1. Pillager Project Entrainment Database**

Reference Site	Project Size (MW)	Hydraulic Capacity (cfs)	Head (ft)	Location	Operating Mode	Predominant Fish Species	Ent. Rate (fish/MCF)
Shawano	0.7	850	16	Wisconsin	Run-of-river	bluegill, black crappie, pumpkinseed	1.50
Thornapple	1.6	1,400	11	Wisconsin	Run-of-river	black crappie, walleye, yellow perch	1.39
Brule	5.3	1,377	32	Wisconsin	Run-of-river	yellow perch, minnow species	0.97
Mio	5.0	4,950	21	Michigan	Run-of-river	bluegill, smallmouth bass	0.77
Alcona	8.0	8,000	43	Michigan	Peaking	bluegill, white sucker, yellow perch	0.36
Loud	4.0	4,444	24	Michigan	Peaking	bluegill, black crappie, rock bass, walleye	1.16
Cooke	9.0	3,600	17	Michigan	Peaking	black crappie, yellow perch	1.96
Foote	9.0	4,050	25	Michigan	Peaking	smallmouth bass, walleye, white sucker	1.21
Rogers	8.8	2,400	40	Michigan	Run-of-river	bass species, walleye, yellow perch	0.74
<b>Pillager</b>	1.5	1,240	20	Minnesota	Run-of-river	sunfish species, yellow perch	<b>1.12</b>

### 3.2 Entrainment Estimate

Table 3-2 through Table 3-4 provide the calculated annual flows through the Pillager Project powerhouse for a low water year, an average water year (i.e., average river flows observed during 1993-2023), and a high-water year, and the estimated monthly total entrainment rates for each of these flow conditions. The monthly flows were multiplied by the annual entrainment rate calculated for the Pillager Project (estimated entrainment rate of 1.12 fish/MCF) to estimate annual entrainment. This calculation estimated annual entrainment at 12,647 fish per year during a low water year, 39,738 fish per year during an average water year, and 43,800 fish per year during a high water year, prior to the application of filters that influence entrainment (Table 3-2 to Table 3-4). Powerhouse monthly flow rates assume continuous operation up to maximum capacity of 1,240 cfs.

**Table 3-2. Pillager Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - Low Flow**

<b>Month</b>	<b>Monthly River Flow (cfs)</b>	<b>Powerhouse Flow (cfs)</b>	<b>Powerhouse Monthly Flow (MCF)</b>	<b>Estimated Fish Entrained (low)</b>
January	352	352	943	1,056
February	343	343	830	929
March	382	382	1,023	1,146
April	834	834	2,162	2,421
May	638	638	1,709	1,914
June	415	415	1,076	1,205
July	264	264	707	792
August	143	143	383	429
September	200	200	518	581
October	308	308	825	924
November	164	164	425	476
December	258	258	691	774
<b>Annual</b>				<b>12,647</b>

**Table 3-3. Pillager Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - Average Flow**

<b>Month</b>	<b>Monthly River Flow (cfs)</b>	<b>Powerhouse Flow (cfs)</b>	<b>Powerhouse Monthly Flow (MCF)</b>	<b>Estimated Fish Entrained (average)</b>
January	812	812	2,175	2,436
February	781	781	1,889	2,116
March	1,527	1,240	3,321	3,720
April	3,222	1,240	3,214	3,600
May	2,684	1,240	3,321	3,720
June	2,167	1,240	3,214	3,600
July	1,608	1,240	3,321	3,720
August	1,126	1,126	3,016	3,378
September	1,076	1,076	2,789	3,124
October	1,358	1,240	3,321	3,720
November	1,288	1,240	3,214	3,600
December	1,002	1,002	2,684	3,006
<b>Annual</b>				<b>39,740</b>

**Table 3-4. Pillager Powerhouse Flows and Entrainment Rate Prior to Application of Entrainment Filters - High Flow**

<b>Month</b>	<b>Monthly River Flow (cfs)</b>	<b>Powerhouse Flow (cfs)</b>	<b>Powerhouse Monthly Flow (MCF)</b>	<b>Estimated Fish Entrained (high)</b>
January	1,847	1,240	3,321	3,720
February	3,384	1,240	3,000	3,360
March	11,339	1,240	3,321	3,720
April	14,517	1,240	3,214	3,600
May	8,384	1,240	3,321	3,720
June	8,848	1,240	3,214	3,600
July	5,979	1,240	3,321	3,720
August	3,513	1,240	3,321	3,720
September	3677	1240	3,214	3,600
October	5815	1240	3,321	3,720
November	3797	1240	3,214	3,600
December	3505	1240	3,321	3,720
<b>Annual</b>				<b>43,800</b>

### 3.3 Species and Length Class Composition

Species and length class composition were calculated using the results of Minnesota DNR trap netting surveys (Minnesota DNR 2024). Most documented fish were less than 9-inches in length (Table 3-5). Similar species were pooled into family groups, including sucker species (greater redhorse, silver redhorse, shorthead redhorse, and white sucker) and bullhead species (yellow bullhead and brown bullhead) (Table 3-6). Species and length composition percentages were applied to the annual entrainment total to estimate entrainment by species and length class.

**Table 3-5. Length Class Composition Percentages by Species**

Length Class (in.)	Black Crappie	Catfish spp.	Sunfish spp.	Bowfin	Cyprinid spp.	Northern Pike	Sucker spp.	Walleye	Yellow Perch
0.0-5.0	20%	21%	19%	0%	100%	0%	0%	0%	4%
5.1-9.0	20%	66%	81%	0%	0%	3%	0%	0%	93%
>9.0	61%	13%	1%	100%	0%	97%	100%	100%	3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Table 3-6. Combined Family Groups**

Species	Total	Relative Abundance (%)
Black crappie	41	4.5%
Catfish spp.	197	21.8%
Sunfish spp.	394	43.7%
Bowfin	12	1.3%
Largemouth bass	2	0.2%
Cyprinid spp.	1	0.1%
Northern pike	39	4.3%
Sucker spp.	27	3.0%
Walleye	5	0.6%
Yellow perch	184	20.4%
Black crappie	41	4.5%
<b>Total</b>	<b>902</b>	<b>100%</b>

### 3.4 Entrainment Filters

The calculated approach velocity (2.0 feet per second [fps]) and through velocity (2.3 fps) at the maximum hydraulic capacity were compared to the calculated swim speed of fish for each length class. Fish swim speeds were calculated using an assumed minimum sustained swim speed of three body lengths per second (Table 3-7) (USFWS 1989). Sustained swim speed calculations show that fish greater than 9 inches would likely be

able to escape flow at the Pillager Project intake and avoid entrainment; therefore, fish larger than 9 inches were excluded from the entrainment estimate. Entrainment totals after screening fish larger than 9 inches for low, average, and high flow scenarios are included in Table 3-8 to Table 3-10. Filtered annual entrainment rates range from 10,414 fish per year in the low flow scenario to 36,069 fish per year in the high flow scenario.

**Table 3-7. Fish Swimming Speed by Length**

<b>Fish Length (in.)</b>	<b>Sustained Swim Speed (ft/s)</b>
1.0	0.3
2.0	0.5
3.0	0.8
4.0	1.0
5.0	1.3
6.0	1.5
7.0	1.8
8.0	2.0
9.0	2.3
10.0	2.5
11.0	2.8
12.0	3.0
13.0	3.3
14.0	3.5

**Table 3-8. Filtered Annual Entrainment Results by Species - Low Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	224
Catfish spp.	2,399
Sunfish spp.	5,496
Bowfin	0
Largemouth bass	0
Cyprinid spp.	14
Northern pike	14
Sucker spp.	0
Walleye	27
Yellow perch	2,240
<b>Total</b>	<b>10,414</b>

**Table 3-9. Filtered Annual Entrainment Results by Species - Average Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	705
Catfish spp.	7,537
Sunfish spp.	17,269
Bowfin	0
Largemouth bass	0
Cyprinid spp.	44
Northern pike	44
Sucker spp.	0
Walleye	0
Yellow perch	7,842
<b>Total</b>	<b>33,441</b>

**Table 3-10. Filtered Annual Entrainment Results by Species - High Flow**

<b>Species</b>	<b>Annual Entrainment</b>
Black crappie	777
Catfish spp.	8,307
Sunfish spp.	19,033
Bowfin	0
Largemouth bass	0
Cyprinid spp.	49
Northern pike	49
Sucker spp.	0
Walleye	95
Yellow perch	7,759
<b>Total</b>	<b>36,069</b>

### **3.5 Fish Impingement**

The largest individual sucker species, catfish species, northern pike, and bowfin would not be capable of fitting through the Pillager Project's 1.5-inch trashrack spacing (Table 3-11). Fish in these larger size classes would be expected to have sustained swim speeds well above the 2.1 fps approach velocity and 2.3 fps through velocity and would therefore not be susceptible to impingement. All fish with sustained swim speeds at or below the through velocity of 2.3 fps have interorbital widths well below the 1.5 in trashrack spacing and would not be susceptible to impingement on the Pillager trashracks.

**Table 3-11. Calculated Interorbital Widths for Fish Species Collected at the Pillager Project**

<b>Species</b>	<b>Total Length of Largest Individual from Dataset (in.)</b>	<b>Interorbital Width of Largest Individual from Dataset (in.)*</b>
Bluegill	9.1	0.44
Largemouth bass	18.1	1.13
Rock bass	11.5	0.95
White sucker	18.9	2.26
Black crappie	14.6	0.81
Brown bullhead**	12.1	1.54
Silver redhorse***	22.8	2.10
Northern pike	29.9	1.66
Walleye	24.3	1.17
Yellow perch	9.9	0.62
Bowfin	23.1	1.97

\*Interorbital widths calculated from proportional measurements listed in Smith (1985).

\*\*Surrogate for yellow bullhead and black bullhead.

\*\*\*Surrogate for shorthead redhorse and greater redhorse.

### **3.6 Mortality Estimate**

Mortality rates were applied to the dataset after screening fish capable of escaping powerhouse inflow. The mortality rate calculated for 5-inch fish was applied to all fish in the 0–5-inch length class with correlation factors of 0.10, 0.15, and 0.20 (Table 3-12). The mortality rate calculated for 9-inch fish was applied to all fish in the 5.1-9.0-inch length class. Total annual entrainment mortality for the low flow scenario ranged from 1,660 fish to 3,323 fish (Table 3-13). Total annual entrainment mortality for the average flow scenario ranged from 5,459 fish to 10,917 fish (Table 3-14). Total annual mortality for the high flow scenario ranged from 5,753 fish to 11,503 fish (Table 3-15).

**Table 3-12. Entrainment Mortality Rates**

Length Class	Correlation Factor		
	0.10	0.15	0.20
0-5-inch	9.8%	14.7%	19.6%
5.1-9.0-inch	17.7%	26.5%	35.4%

**Table 3-13. Total Annual Entrainment Mortality - Low Flow**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	31	46	62
Catfish spp.	378	567	757
Sunfish spp.	891	1,336	1,781
Bowfin	0	0	0
Largemouth bass	0	0	0
Cyprinid spp.	1	2	3
Northern pike	2	4	5
Sucker spp.	0	0	0
Walleye	4	6	8
Yellow perch	353	530	707
<b>Total</b>	<b>1,660</b>	<b>2,491</b>	<b>3,323</b>

**Table 3-14. Total Annual Entrainment Mortality - Average Flow**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	97	145	194
Catfish spp.	1,189	1,783	2,377
Sunfish spp.	2,799	4,198	5,597
Bowfin	0	0	0
Largemouth bass	0	0	0
Cyprinid spp.	4	6	9
Northern pike	8	12	16
Sucker spp.	0	0	0
Walleye	0	0	0
Yellow perch	1,362	2,043	2,724
<b>Total</b>	<b>5,459</b>	<b>8,187</b>	<b>10,917</b>

**Table 3-15. Total Annual Entrainment Mortality - High Flow**

Species	Correlation Factor		
	0.10	0.15	0.20
Black crappie	107	160	214
Catfish spp.	1,310	1,965	2,620
Sunfish spp.	3,085	4,627	6,169
Bowfin	0	0	0
Largemouth bass	0	0	0
Cyprinid spp.	5	7	10
Northern pike	9	13	17
Sucker spp.	0	0	0
Walleye	13	20	26
Yellow perch	1,224	1,836	2,447
<b>Total</b>	<b>5,753</b>	<b>8,628</b>	<b>11,503</b>

## 4.0 DISCUSSION

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A comparison of fish swim speeds and body sizes to project intake velocities and trash rack spacing indicates low potential for impingement, as intake velocities are lower than swimming speeds for fish species and size classes that are large enough to be impinged. It is likely that fish entering the project intake would either avoid intake flows or be entrained through the trashracks. Therefore, impingement is unlikely to be a project impact.

The estimates of annual entrainment and turbine mortality presented in this report were developed based on available data and are intended to provide an order-of-magnitude assessment of potential fish entrainment and turbine mortality at the Pillager Project. The calculations used several conservative assumptions. The method used to determine powerhouse operations was based on ideal conditions and assumes that the Pillager Project is always available to operate at maximum capacity based on water availability. It does not account for planned or unplanned outages when the hydraulic capacity of the facility is reduced. Reduced hydraulic capacity would reduce the entrainment rate and subsequently the entrainment mortality estimates. Additionally, the survival estimate is influenced by using the turbine mortality rate estimates for the largest fish in the entrained size classes and applying them to all fish. This results in applying a higher mortality estimate for smaller fish within the group than would be expected.

The fish collection data and entrainment estimate are largely comprised of yellow perch, sunfish species (e.g., bluegill and pumpkinseed), and several species of bullhead. These species are all highly fecund and can produce large numbers of offspring per individual female each season (Jenkins and Burkhead 1993). The smallest individuals of these species (e.g., young-of-year) would likely have relatively high entrainment survival rates. Conversely, the smallest size groups that occur soon after hatching have the highest natural mortality rates (typically 90% or greater) associated with ecological and environmental factors (Jenkins and Burkhead 1993). Natural mortality in the population would be substantially higher than the estimated entrainment mortality of the Pillager Project. Only a very small proportion of the population is subject to entrainment impacts, and for those that are, the entrainment mortality rate for young-of-year sized sunfish species and yellow perch (i.e., 0-2 inches) is expected to be lower than that of larger bodied fish.

Annual filtered entrainment estimates across flow scenarios ranged from approximately 10,000 fish to approximately 36,000 fish. A high percentage of the species composition for this study includes small centrarchid (sunfish) species. Centrarchids less than six inches in total length were also the most abundant size class and family group documented during empirical entrainment studies at multiple projects in the Midwest. Yellow perch and catfish species (including several bullhead species) also comprised a notable percentage of the estimated entrainment composition in this study, and a notable percentage of total fish entrained in empirical entrainment studies. (EPRI 1997). Annual mortality estimates ranged from approximately 1,700 to 3,300 fish killed in the low flow scenario to 5,700 to 11,500 fish killed in the high flow scenario.

Additional passage related impacts are possible through the Pillager Project spillway during periods of high flows, or when the powerhouse is not fully operational. During a low water year, monthly average flow rates remain below the powerhouse capacity of 1,240 cfs for the duration of all months. In an average water year, flows more than 1,240 cfs are exceeded approximately 50% of the time. Heisey et al. (1992) examined survival rates of juvenile salmonids passing over dam spillways in the Columbia and Snake River systems, finding survival rates ranging from 88% to 100%. Survival rates varied based on spill volume, with higher spill volumes associated with higher fish survival. Fish passing via spill is most likely to occur during high flow periods when flows in excess of 1,240 cfs are regularly exceeded, and spillway passage would not be expected to cause notable mortality rates for fish at the Pillager Project.

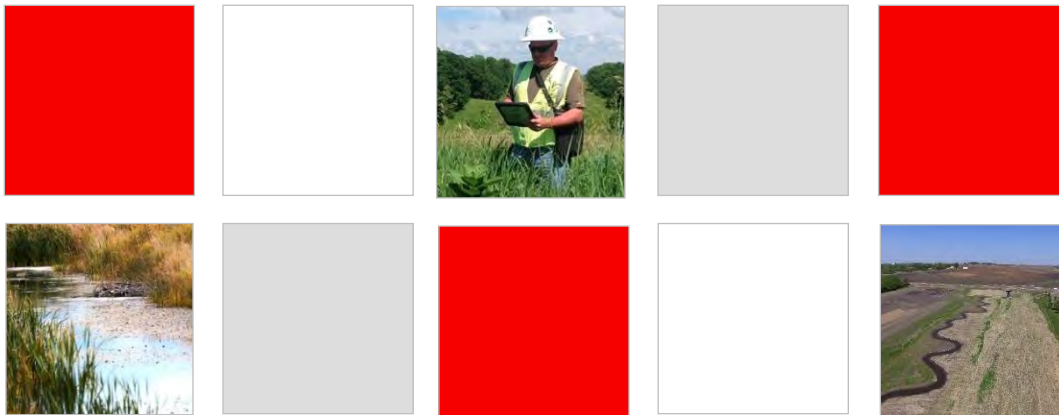
## 5.0 REFERENCES

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- Bell, M.C. 1981. Updated Compendium on the Success of Passage of Small Fish through Turbines. Tech. rep., U.S. Army Corps of Engineers.
- Cada, G.F. 1998. Better Science Supports Fish-Friendly Turbine Designs. *Hydro Review* 17(6):52-61.
- Electric Power Research Institute (EPRI). 1997. Turbine Entrainment and Survival Database-Field Tests. Prepared by Alden Research Laboratories, Inc. TR-108630.
- Federal Energy Regulatory Commission (FERC). 1995. Preliminary Assessment of Fish Entrainment at Hydropower Projects. Volumes 1 and 2. Office of Hydropower Licensing, FERC. Washington, DC.
- Franke, G.F., D.R. Webb, and R.K. Fisher. 1997. Development of Environmentally Advanced Hydropower Turbine System Design Concepts. Tech. rep., Lockheed Idaho Technologies, Co.
- Heisey, P.G., D. Mathur and T. Rineer. 1992. A Reliable Tag-Recapture Technique for Estimating Turbine Passage Survival: Application to Young-of-the-Year American Shad (*Alosa sapidissima*). *Canadian Journal of Fisheries and Aquatic Sciences*. 49:1826-1834.
- Jenkins, R.E. and N.M. Burkhead. 1993. *Freshwater Fishes of Virginia*. American Fisheries Society, Bethesda, Maryland.
- Minnesota Department of Natural Resources (Minnesota DNR). 2021. Lake Management Plan-Placid (Pillager Reservoir). DOW Number 49-0080.
- Minnesota Department of Natural Resources (Minnesota DNR). 2024. Lake Survey Report-Placid. Preliminary Draft. DOW Number 49-0080-00.
- Smith, C.L. 1985. *The Inland Fishes of New York State*. New York State Department of Environmental Conservation. Albany, New York. 522 pp.
- United States Fish and Wildlife Service (USFWS). 1989. Water Velocity Standards at Power Plant Intakes: Traditional and Alternative Rationales. Information Bulletin No. 89-61.

## **Appendix K**

### **Pillager Project Recreation Use and Facility Inventory Study Report**



PREPARED FOR

**Minnesota Power  
Pillager Hydroelectric Project  
FERC Project No. P-2454  
Cass and Morrison Counties, MN**

## **Recreation Use and Facility Inventory Study**

PREPARED BY

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February 2025



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## 1.0 INTRODUCTION

The Pillager Hydroelectric Project (Project) is owned and operated by Minnesota Power (MP), an ALLETE Company, and is licensed by the Federal Energy Regulatory Commission (FERC). The Project’s FERC License (P-2454) was issued on April 27, 1998, and the current operating license will expire on March 31, 2028. In accordance with FERC’s regulations at 18 Code of Federal Regulations (CFR) §16.9(b), MP will file an application for a new license with FERC no later than March 31, 2026. As part of the FERC relicensing, Merjent, Inc. (Merjent) was retained by MP to perform the recreation use and facility inventory study.

### 1.1 PROJECT DESCRIPTION

The Pillager Hydroelectric Project is a 1.52 Megawatt (MW), run-of-river hydroelectric generation facility located on the Crow Wing River in Cass and Morrison Counties, Minnesota. Recreation sites have been identified at four locations within the Project boundary and include: Alvah’s Landing, Pillager Dam Public Boat Launch, Pillager Dam Public Canoe Portage and Shorefishing Access, and the Crow Wing River Canoe Campsite. Each of the sites can be accessed any time of day and have no specific hours of operation. With the exception of the Pillager Dam Public Boat Launch, in which maintenance responsibilities are shared between MP and the Minnesota Department of Natural Resources (MnDNR), the owner / operator of each site performs all maintenance activities. MP’s maintenance includes inspecting signs, mowing, and collecting garbage three times each summer. The MnDNR performs similar activities at the Alvah’s Landing site and is typically responsible for road and boat launch repairs at the Pillager Dam Public Boat Launch site.

Site locations and plan views of each recreation site, including the Project’s FERC boundary, are included in Appendix A. An overview of the recreation sites, their owners, and locations with respect to the dam are included in Table 1-1 below. Further details are provided in each site’s representative subsection of Section 3.

Recreation Site Name	Owner/Operator	Description
Alvah’s Landing (MnDNR Boat Launch)	MnDNR	Boat launch located approximately 3 miles upstream of the Pillager Dam, on the south shore of the Crow Wing River. Parking for approximately 10 vehicles and a concrete boat ramp.
Pillager Dam Public Boat Launch	MP & MnDNR <sup>(1)</sup>	Boat launch located on the north shore of the Pillager reservoir, adjacent to dam structure. Parking for approximately 15 vehicles and a concrete boat ramp.
Pillager Dam Public Canoe Portage and Shorefishing Access	MP	Located on the south shore of the Pillager Dam. Canoe portage trail around the south end of Pillager dam, approximately 300 feet in length. Fishing area south of the dam.
Crow Wing River Canoe Campsite	MP	Two canoe-up primitive campsites located approximately 2.5 miles upstream of the Pillager Dam, just downstream and across the river from Alvah’s landing.

Notes: <sup>(1)</sup> MP owns the land for Pillager Dam Public Boat Launch and leases the land to MnDNR.

## **1.2 OBJECTIVE**

This inventory was conducted to evaluate recreation facilities and use to inform the FERC relicensing process for the Project. The recreation study was conducted in accordance with the Revised Study Plan for the relicensing at Little Falls, Sylvan, and Pillager Hydroelectric Projects, submitted by MP and dated January 9, 2024 (Kleinschmidt, 2024). The following tasks were performed for the recreation study:

- Perform an inventory and condition assessment of the recreation facilities and associated amenities at the FERC-approved recreation sites, including identifying erosion that may exist due to recreation use.
- Identify who owns, operates, and maintains each site and describe each recreation site and facility in relation to its associated Project boundary for the hydroelectric facility.
- Conduct user surveys during the recreation season to determine the adequacy of the sites and whether modifications to the sites would be needed to meet current or future recreation needs.
- Determine the current and projected capacity at each recreation site and facility for the hydroelectric facility.

This report has been prepared to document the methodologies, findings, and conclusions from the recreation use and facility inventory study performed during the 2024 recreation season by Merjent on behalf of MP.

## 2.0 METHODOLOGY

Data for the recreation use and facility inventory study were collected by Merjent staff over a series of site visits to each recreation site between the months of May and September 2024. A schedule for the site visits was developed to meet the requirements specified by MP and identified in the relicensing Revised Study Plan (Kleinschmidt, 2024). The dates and times of the site visits were randomly selected using built-in randomization functions in Microsoft Excel, given the study plan parameters and Merjent field staff availability. In addition, the order in which the recreation sites were visited was randomly varied during each survey trip. Site visits were performed on the following dates:

<b>TABLE 2-1</b>		
<b>Recreation Use Survey Schedule</b>		
<b>Dates <sup>(1)</sup></b>	<b>Sites Visited <sup>(2)</sup></b>	<b>Required Occasion <sup>(3)</sup></b>
May 25, 2024 (Sat)	*Alvah's Landing, *Pillager Dam Public Boat Launch, *Pillager Dam Public Canoe Portage and Shorefishing Access	Holiday weekend days (Memorial Day)
May 26, 2024 (Sun)	Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder's Landing, Fisherman's Bridge Boat Launch and Fishing Area	Holiday weekend days (Memorial Day)
June 11, 2024 (Tue)	Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder's Landing, Fisherman's Bridge Boat Launch and Fishing Area, *Pillager Dam Public Boat Launch	June weekdays
June 12, 2024 (Wed)	*Alvah's Landing, *Pillager Dam Public Canoe Portage and Shorefishing Access	June weekdays
June 22, 2024 (Sat)	Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder's Landing, *Pillager Dam Public Boat Launch	June weekend days
June 23, 2024 (Sun)	*Alvah's Landing, *Pillager Dam Public Canoe Portage and Shorefishing Access, Fisherman's Bridge Boat Launch and Fishing Area	June weekend days
June 28, 2024 <sup>(4)</sup> (Fri)	*Crow Wing River Canoe Campsite	June monthly canoe campsite visit
July 4, 2024 (Thu)	Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder's Landing, Fisherman's Bridge Boat Launch and Fishing Area	Holiday weekend days (Fourth of July)
July 5, 2024 (Fri)	*Alvah's Landing, *Pillager Dam Public Boat Launch, *Pillager Dam Public Canoe Portage and Shorefishing Access	Holiday weekend days (Fourth of July)
July 24, 2024 (Wed)	*Alvah's Landing, *Pillager Dam Public Boat Launch, *Pillager Dam Public Canoe Portage and Shorefishing Access	July weekdays
July 25, 2024 (Thu)	Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder's Landing, Fisherman's Bridge Boat Launch and Fishing Area	July weekdays
July 31, 2024 <sup>(4)</sup> (Wed)	*Crow Wing River Canoe Campsite	July monthly canoe campsite visit
Aug. 13, 2024 (Tue)	Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder's Landing, Fisherman's Bridge Boat Launch and Fishing Area, *Alvah's Landing	August or September weekdays
Aug. 14, 2024 (Wed)	*Pillager Dam Public Boat Launch, *Pillager Dam Public Canoe Portage and Shorefishing Access	August or September weekdays
Aug. 27, 2024 <sup>(4)</sup> (Tue)	*Crow Wing River Canoe Campsite	August monthly canoe campsite visit

<b>TABLE 2-1</b>		
<b>Recreation Use Survey Schedule</b>		
<b>Dates <sup>(1)</sup></b>	<b>Sites Visited <sup>(2)</sup></b>	<b>Required Occasion <sup>(3)</sup></b>
Aug. 31, 2024 (Sat)	Sylvan Dam Boat Access and Fishing Area, Sylvan Canoe Portage, Wilder's Landing, Fisherman's Bridge Boat Launch and Fishing Area, *Pillager Dam Public Boat Launch	Holiday weekend days (Labor Day)
Sept. 1, 2024 (Sun)	*Alvah's Landing, *Pillager Dam Public Canoe Portage and Shorefishing Access	Holiday weekend days (Labor Day)
Oct. 2, 2024 <sup>(4)</sup> (Wed)	*Crow Wing River Canoe Campsite	Demobilize canoe campsite

- Notes: <sup>(1)</sup> Recreation sites were visited over two days in conjunction with the Sylvan recreation survey sites.  
<sup>(2)</sup> Sites are listed for both Pillager and Sylvan Projects. Pillager sites are identified with "\*".  
<sup>(3)</sup> Parameters for weekday, weekend, or holiday dates as specified in the revised study work plan.  
<sup>(4)</sup> Canoe campsite visited only for condition assessment and user survey form collection.

The recreation study included two survey activities: 1) a Recreation Facility Inventory and Condition Assessment and 2) a Recreation Use Assessment. Additional discussion of the methodology used to perform each activity is included in the following sections.

## 2.1 RECREATION USE ASSESSMENT

The Recreation Use Assessment consisted of documenting observed usage of the sites, performing a spot count of the number of visitors, and conducting user surveys of visitors at the sites. Recreation usage observations and spot counts were completed over a 2-hour period at each non-canoe access site (Alvah's Landing, Pillager Dam Public Canoe Portage and Shorefishing Access, and Pillager Dam Public Boat Launch). Observation times were randomized for each of the site visit dates specified in the above schedule in Table 2-1, in order to account for time-of-day use patterns. Usage observations consisted of documenting the weather condition, number of people observed, visitor activities, and other pertinent usage notes. For the spot count, field staff recorded the total number of vehicles and visitors observed over a 2-hour period at each site. During the 2-hour period, Merjent field staff also administered user surveys to visitors who were willing to participate. User surveys included collecting visitor opinions on the existing condition and recreation opportunities. User surveys also asked visitors to rate site utilization on a scale from 1 to 5 (with 1 being underutilized and 5 overcrowded) and the site overall condition on a scale from 1 to 5 (with 1 being poor and 5 being excellent).

The Recreation Use Assessment was recorded using the Fulcrum application, a data collection and process management software. Fulcrum survey forms specific to the usage observations, spot count, and user surveys were developed based on the forms provided by MP and included in the relicensing Revised Study Plan (see Appendix B for sample forms). At the non-canoe access sites, the user surveys were administered by Merjent field staff directly to visitors. Both digital and hard-copy versions of the user survey forms were available to use based on visitor preference. Instances in which a visitor declined to complete a survey were not specifically recorded but were occasionally noted on the form.

Due to the remoteness of the Crow Wing River Canoe Campsite (canoe required to access site), a user-administrated survey in a drop-box system was determined to be appropriate to document

recreation use at the site. The drop-box system, consisting of a weather-resistant box and hard copies of usage survey forms, was installed on site at the start of the project, during Memorial Day weekend. In addition, a QR code was developed and posted on the drop-box for the option to complete a digital user survey. The canoe campsite was checked once per month for the duration of the study, in conjunction with the site's condition assessment survey. During each site visit, the drop-box was checked for completed forms or signs of damage. The drop-box was demobilized at the end of the study period, on October 2, 2024.

## **2.2 RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT**

Data for the Recreation Facility Inventory and Condition Assessment was collected by Merjent staff for each of the Pillager recreation sites during one of the Recreation Use Assessment visits at the dates specified in the above schedule (Table 2-1) as time allowed. For the condition assessment, staff observed and documented the types and number of amenities provided at each site, including access roads, parking areas and spots, informational and safety signage, boat launches, campsites, restroom facilities, and pedestrian trails. The condition of the site amenities, as well as any erosion concerns, were also evaluated and documented as either "good condition" or in need of maintenance, repair, or replacement. Photos were taken of general site conditions as well as specific issues, if observed.

Observations were recorded using the Fulcrum application. Fulcrum survey forms specific to this project were developed based on the Recreation Facility Inventory and Condition Assessment form provided by MP and included in the relicensing Revised Study Plan (sample forms included in Appendix B). If conditions were observed requiring immediate action or repair, these were reported to MP as soon as practical following the site visit.

### 3.0 SURVEY RESULTS

The following sections summarize the results of the Recreation Use Assessments and Recreation Facility Inventory and Condition Assessment at each Pillager recreation site. The forms completed in the field, including the user surveys and photographs, are included in Appendix C.

#### 3.1 ALVAH’S LANDING

The Alvah’s Landing recreation site is a boat launch located approximately 3 miles upstream of the Pillager Dam, on the south shore of the Crow Wing River. Site amenities include parking for approximately 10 vehicles and a concrete boat ramp. The site is owned, operated, and maintained by the MnDNR. There are no set hours or seasons of operation for this site.

##### 3.1.1 Recreation Use Assessment Results

Two recreation use surveys were completed by visitors for this site. Key findings from the visitor use surveys and spot counts are as follows and included in Table 3-1:

- In general, Alvah’s Landing was sparsely visited during the recreation survey period. The number of people observed varied from 0 to 2 people per site visit, based on the spot counts.
- The visitors indicated sufficient recreation opportunities were offered at the site.
- No concerns for safety were indicated.
- One visitor noted interest in having a garbage can at the site.

TABLE 3-1								
Alvah’s Landing Recreation Use Survey and Spot Count Summary								
Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
5/25/2024	1	1	See note <sup>(2)</sup>	1	2	2 / 2	3	3 / 3
6/12/2024	0	0	N/A <sup>(3)</sup>	0	N/A	N/A	N/A	N/A
6/23/2024	1	1	See note <sup>(4)</sup>	0	N/A	N/A	N/A	N/A
7/5/2024	0	0	N/A <sup>(3)</sup>	0	N/A	N/A	N/A	N/A
7/24/2024	0	0	N/A <sup>(3)</sup>	0	N/A	N/A	N/A	N/A
8/13/2024	2	1	See note <sup>(4)</sup>	0	N/A	N/A	N/A	N/A
9/1/2024	1	0	Hiking / Walking / Jogging	1	1	1 / 1	3	3 / 3

Notes: <sup>(1)</sup> Utilization rated from 1 to 5, where 1 = “underutilized”, 3 = “moderate”, and 5 = “overcrowded.”

<sup>(2)</sup> One car drove in, stopped to complete a survey, then immediately left.

<sup>(3)</sup> No visitors were observed; therefore, no activities were noted.

<sup>(4)</sup> Vehicle drove in and immediately left without stopping to complete a survey.

### 3.1.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Alvah’s Landing site are listed in Table 3-2 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey are as follows and included in Table 3-2:

- Site amenities include access roads, parking areas, a boat launch, and signage.
- Parking / Roadway Observations:
  - Staff identified erosion in the form of potholes in the access road and depressions around the parking lot that at times were holding water. Erosion of the riverbank or adjacent to the reservoir, indicating potential instability, was not identified.
  - A fallen tree in the site access road was identified during the first site visit on May 25, 2024. MP was immediately notified of the tree. The tree had been cleared by the next site visit on June 12, 2024.
- Boat Launch Observations:
  - Boat launch conditions were noted as “needs maintenance” due to overgrown vegetation. Staff reported that the access to the river from the launch was overgrown such that it would be difficult to launch most types of boats, canoes, or other watercraft.
  - The launch structure itself was observed to be in good condition.
- Signage Observations:
  - The signs around the site included informational signage on fishing regulations and were reported to be in good condition.
  - Near the launch, staff identified a post with no actual sign.
- Other notable findings included trash often scattered throughout the site along with a pile of dumped fish near the launch.

<b>TABLE 3-2</b>				
<b>Alvah’s Landing Recreation Facility Inventory and Condition Assessment Summary</b>				
<b>Amenity Type</b>	<b>Description</b>	<b>Coordinates</b>	<b>Condition</b>	<b>Condition Notes</b>
Access Road	One lane access road to the site.	46.3050°, -94.5483°	Needs Maintenance	Potholes along road.
Parking Area	Dirt parking area with approximately 10 spaces. Spaces are not clearly defined, but the space is large enough to accommodate boat trailers.	46.3051°, -94.5481°	Needs Maintenance	Potholes / depressions (ponded water observed after rain events).
Boat Launch	Hard surface one lane boat launch.	46.3051°, -94.5476°	Needs Maintenance	Overgrown vegetation in water blocking access to the river.
Informational Signage (1)	Aquatic hitchhiker sign	46.3050°, -94.5483°	Good Condition	

<b>TABLE 3-2</b>				
<b>Alvah’s Landing Recreation Facility Inventory and Condition Assessment Summary</b>				
Amenity Type	Description	Coordinates	Condition	Condition Notes
Informational Signage (2)	Sign posts next to boat launch	46.3051°, -94.5476°	Good Condition	Posts are in good condition, but no signs are posted.
Informational Signage (3)	Public water access sign	46.3029°, -94.5482°	Good Condition	

### 3.2 PILLAGER DAM PUBLIC BOAT LAUNCH

The Pillager Dam Public Boat Launch recreation site is a boat launch located on the north shore of the Pillager reservoir, adjacent to the dam structure. Site amenities include parking for approximately 15 vehicles (5 regular vehicle spaces and 10 vehicle with trailer spaces) and a concrete boat ramp. The site is owned by MP, who leases the land to MnDNR for operation of the site. Maintenance responsibilities at the site are shared between MP and the MnDNR. There are no set hours or seasons of operation for this site.

#### 3.2.1 Recreation Use Assessment Results

Twelve recreation use surveys were completed by visitors for this site. Key findings from the visitor use surveys and spot counts are as follows and included in Table 3-3:

- The visitors indicated sufficient recreation opportunities were offered at the site.
- No concerns for safety were indicated.
- Eight visitors expressed concerns over the potholes and rutting in the parking area and along the access road.
- Three visitors also expressed interest in adding a garbage can and a restroom to the site.

<b>TABLE 3-3</b>								
<b>Pillager Dam Public Boat Launch Recreation Use Survey and Spot Count Summary</b>								
Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
5/25/2024	5	4	Fishing from a boat	2	3.5	4 / 3	3.5	4 / 3
6/12/2024	0	0	N/A <sup>(2)</sup>	0	N/A	N/A	N/A	N/A
6/22/2024	4	2	Fishing from the shore, fishing from a boat	1	3	3 / 3	4	4 / 4
7/5/2024	8	4	Fishing from the shore, fishing from a boat, picnicking	3	3.33	4 / 3	3.33	4 / 3

TABLE 3-3								
Pillager Dam Public Boat Launch Recreation Use Survey and Spot Count Summary								
Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
7/24/2024	15	8	Fishing from a boat	2	2	3 / 1	4	4 / 4
8/14/2024	1	1	N/A <sup>(3)</sup>	0	N/A	N/A	N/A	N/A
8/31/2024	16	8	Fishing from a boat, motorized boating	4	2.25	3 / 2	2.5	3 / 2

Notes: <sup>(1)</sup> Utilization rated from 1 to 5, where 1 = “underutilized”, 3 = “moderate”, and 5 = “overcrowded.”

<sup>(2)</sup> No visitors were observed; therefore, no activities were noted.

<sup>(3)</sup> Vehicle drove in and immediately left without stopping to complete a survey.

### 3.2.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Pillager Dam Public Boat Launch site are listed in Table 3-4 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey are as follows and included in Table 3-4:

- Site amenities include access roads, parking areas, boat dock and launch, pedestrian trail, and signage.
- Parking / Roadway Observations:
  - During each site visit, staff identified erosion in the form of potholes, depressions, and rill erosion around the parking lot and along the access road that at times were holding water. Erosion of the riverbank or adjacent to the reservoir, indicating potential instability, was not identified.
  - Handicap parking spaces were identified with adequate signage.
- Boat Dock and Launch Observations:
  - The launch was reported to be in good condition.
  - The boat dock for the site has a ramp that only touches the ground on one corner and bounces when stepped on. This condition was noted as “needs maintenance”, as the lip / gap could potentially be hazardous to those accessing the dock.
- Pedestrian Trail Observations:
  - The pedestrian paths at the site consisted of grass walkways and were observed to be in good condition with evidence of regular mowing.

Amenity Type	Description	Coordinates	Condition	Condition Notes
Access Road	Two lane access road leading to the site	46.3174°, -94.4866°	Needs Maintenance	Potholes observed along the road
Parking Area	Parking area with approximately 15 spaces, including space for boat trailers	46.3168°, -94.4865°	Needs Maintenance	Minor depressions and rutting
Boat Launch	Hard surface one lane boat launch	46.3167°, -94.4866°	Good Condition	
Boat Dock	Dock next to launch	46.3167°, -94.4865°	Needs Maintenance	There is a slight gap at the bottom of the ramp that could be a tripping hazard.
Pedestrian Trail	Walking trail near parking area	46.3167°, -94.4865°	Good Condition	
Informational Signage (1)	Entrance sign to launch area	46.3173°, -94.4855°	Good Condition	
Informational Signage (2)	Fishing regulation board near launch with two signs posted	46.3167°, -94.4865°	Good Condition	
Informational Signage (3)	Invasive species sign near boat launch	46.3167°, -94.4865°	Good Condition	

### 3.3 PILLAGER DAM PUBLIC CANOE PORTAGE AND SHOREFISHING ACCESS

The Pillager Dam Public Canoe Portage and Shorefishing Access recreation site is located on the south shore of the Pillager Dam. Site amenities include a canoe portage trail around the south end of Pillager Dam, approximately 300 feet in length, and a fishing area south of the dam. Available parking space for one or two vehicles was identified at the site entrance. The site is operated and maintained by MP. There are no set hours or seasons of operation for this site.

#### 3.3.1 Recreation Use Assessment Results

Four recreation use surveys were completed by visitors for this site. Key findings from the visitor use surveys and spot counts are as follows and included in Table 3-5:

- The visitors generally indicated sufficient recreation opportunities were offered at the site. However, one surveyed party noted insufficient opportunities due to limited handicap access to the site.
- No concerns for safety were indicated.
- Three visitors noted that the entrance gate prevents many people from using the site. Two visitors appreciated that the gate kept the site quiet and prevented overcrowding; however, one visitor said the gate and signs make it unclear that there is public access.
- One visitor noted their relative had issues maneuvering around the gate in a wheelchair.
- Visitors generally commented that they enjoyed the site for fishing.

Date	No. of Visitors	No. of Cars	Activities Observed	No. of User Surveys	Average Site Utilization Score <sup>(1)</sup>	Max / Min Utilization Score	Average Site Condition Score	Max / Min Site Condition Score
5/25/2024	7	2	Fishing from the shore	2	3	3 / 3	4.5	5 / 4
6/12/2024	0	0	N/A <sup>(2)</sup>	0	N/A	N/A	N/A	N/A
6/23/2024	2	1	Fishing from the shore, picnicking	1	3	3 / 3	3	3 / 3
7/5/2024	0	0	N/A <sup>(2)</sup>	0	N/A	N/A	N/A	N/A
7/24/2024	1	0	Fishing from the shore	1	2	2 / 2	4	4 / 4
8/14/2024	0	0	N/A <sup>(2)</sup>	0	N/A	N/A	N/A	N/A
9/1/2024	0	0	N/A <sup>(2)</sup>	0	N/A	N/A	N/A	N/A

Notes: <sup>(1)</sup> Utilization rated from 1 to 5, where 1 = “underutilized”, 3 = “moderate”, and 5 = “overcrowded.”

<sup>(2)</sup> No visitors were observed; therefore, no activities were noted.

### 3.3.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Pillager Dam Public Canoe Portage and Shorefishing Access site are listed in Table 3-6 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey are as follows and included in Table 3-6:

- Site amenities include an access road, parking area, canoe boat launch, pedestrian trail, and signage.
- Minimal to no erosion was noted at the site. Where observed, erosion appeared minor or surficial wash out, potentially caused by recent rain. The erosion does not appear to indicate significant slumping or signs of instability.
- Parking / Roadway Observations:
  - The access road is blocked by a gate at the site entrance, and therefore is closed to public vehicular traffic and accessible by foot only. The gate may be opened for maintenance vehicle access. The access road was at times noted to be overgrown.
  - The parking area had a large branch fall in the middle of the summer that laid near the entrance gate and remained there for the rest of the summer. The single parking space at the gate was slightly blocked by this branch.
  - Parking was noted to be limited (only space for one vehicle), and vehicles were observed parked on the edge of the road.
- Signage Observations:
  - Safety signage at the site included “Danger / No Trespassing” signs associated with the dam, and information signage included site entrance and trail markers.

- The portage trail marker is rotted out and has tipped over slightly sideways. It is still standing, but now harder to see behind the overgrown vegetation at the portage landing area.
- Other signs around the site at times were obscured by vegetation.
- Other notable observations include an area for shorefishing on the riverbank downstream of the dam. Some to notable amounts of litter and dumped fish were occasionally identified around the shorefishing area.

Amenity Type	Description	Coordinates	Condition	Condition Notes
Access Road	One lane access road to site	46.3113°, -94.4835°	Good Condition	
Parking Area	Small parking area with room for one or two cars.	46.3113°, -94.4835°	Needs Maintenance	Large branch is down at gate
Shorefishing Area	Area for fishing on the riverbank downstream of dam	46.3151°, -94.4841°	Good Condition	Some litter present
Boat Launch	Unimproved / informal boat launch	46.3151°, -94.4840°	Good Condition	Upstream landing area is slightly overgrown
Pedestrian Trail	Walking path and portage path down to the fishing area	46.3148°, -94.4840°	Good Condition	Area was recently mowed
Informational Signage (1)	Signs at the entrance gate	46.3115°, -94.4835°	Good Condition	
Informational Signage (2)	Portage trail marker	46.3146°, -94.4848°	Needs to be Replaced	Sign is falling over and rotted
Safety Signage (3)	Danger Sign	46.3146°, -94.4840°	Needs Maintenance	Sign is slightly overgrown
Safety Signage (4)	Danger, no trespassing sign	46.3146°, -94.4841°	Needs Maintenance	Sign is overgrown
Safety Signage (5)	Danger, no trespassing sign	46.3150°, -94.4843°	Good Condition	
Safety Signage (6)	Security cameras in use sign	46.3150°, -94.4843°	Good Condition	

### 3.4 CROW WING RIVER CANOE CAMPSITE

The Crow Wing River Canoe Campsite recreation site is located approximately 2.5 miles upstream of the Pillager Dam, just downstream and across the river from Alvah’s landing, and includes two canoe-up primitive campsites. The site is owned, operated, and maintained by MP. There are no set hours or seasons of operation for this site.

#### 3.4.1 Recreation Use Assessment Results

The Recreation Use Assessment of the canoe campsite provided no entries from either the onsite drop-box or the QR code. No visitors were observed during the monthly site visits to collect forms

and perform the condition assessment. Additionally, minimal to no signs or indication of site use were observed by Merjent staff during the monthly site visits.

### 3.4.2 Recreation Facility Inventory and Condition Assessment Results

Recreation facilities for the Crow Wing River Canoe Campsite site are listed in Table 3-7 below, and their locations are shown on the figures in Appendix A. Key observations for the facility inventory and condition survey are as follows and included in Table 3-7:

- Site amenities include two primitive campsites, firepit/rings, and signage. Since access to the site is via the Crow Wing River, no roads or parking areas are associated with this site.
- No areas of noticeable erosion were observed.
- Campsite Observations:
  - Campsite location 1 was reported to be in good condition. Potential wild rice growth was observed near the entrance that may obscure the site.
  - Campsite location 2 was reported as overgrown and in need of maintenance. The trail to the site was noted to be difficult to find with no marker.
- Firepit/ring Observations:
  - The firepit rings at each campsite were noted to be in good condition.
- Signage Observations:
  - Photos indicate informational signage on the river site and identify the canoe campsite area. Signs appear in good condition.

<b>Crow Wing River Canoe Campsite Recreation Facility Inventory and Condition Assessment Summary</b>				
Amenity Type	Description	Coordinates	Condition	Condition Notes
Firepit/Ring	Firepit at campsites	46.3051°, -94.5414°	Good Condition	
Campsite #1	Primitive campsite closest to Crow Wing River	46.3048°, -94.5415°	Good Condition	Overall good site, but vegetation is starting to hide the access point.
Campsite #2	Primitive campsite farthest from Crow Wing River	46.3048°, -94.5415°	Needs Maintenance	Overgrown vegetation
Informational Signage (1)	Canoe Camping Trail Marker	46.3047°, -94.5414°	Good Condition	
Informational Signage (2)	Save This Stream Sign	46.3051°, -94.5414°	Good Condition	

## 4.0 CAPACITY ANALYSIS OF USER SURVEYS

The user survey data was further analyzed to evaluate the current and predicted capacity at each recreation site. Assessment of existing capacity included computing the average number of visitors over the 2-hour survey period and one recreation day, as well as the average reported site utilization scores. Given typical daylight hours and that there are no set hours of operation for any of the recreation sites, one recreation day was assumed to be 10 hours long. Visitors per recreation day was computed by projecting the 2-hour visitor count over 10 hours. The assessment also included comparing the number of observed vehicles versus available parking spaces. Existing capacity was evaluated as follows:

- “Sufficient” – Average site utilization score of 4 or lower and average number of vehicles was less than 90% of available parking spaces
- “Insufficient” – Average site utilization score greater than 4 and average number of vehicles regularly exceeded available number of spots

Results of the existing capacity evaluation are presented in the following Table 4-1.

<b>User Survey Existing Capacity Analysis</b>						
<b>Site</b>	<b>Avg. No. of Visitors (2-hr)</b>	<b>Visitors Per Recreation Day <sup>(1)</sup></b>	<b>Avg. No. of Vehicles (2-hr)</b>	<b>No. of Parking Spots</b>	<b>Avg. Site Utilization Score <sup>(2)</sup></b>	<b>Existing Capacity</b>
Alvah’s Landing	0.7	4	0.4	10	1.5	Sufficient
Pillager Dam Public Boat Launch	7.0	35	3.9	15	2.8	Sufficient
Pillager Dam Public Canoe Portage and Shorefishing Access	1.4	7	0.4	1 <sup>(3)</sup>	2.7	Sufficient
Crow Wing River Canoe Campsite	0 <sup>(4)</sup>	0	0	0	N/A <sup>(4)</sup>	Sufficient

Notes: <sup>(1)</sup> A “recreation day” assumed to be one 10-hour day.

<sup>(2)</sup> Site utilization scores ranged from 1 to 5, with 1 being underutilized and 5 being overcrowded.

<sup>(3)</sup> Informal parking space for 1 or 2 vehicles at the site entrance (conservatively assume 1 available spot).

<sup>(4)</sup> No visitors were observed, and no user surveys were completed for this site.

Predicted capacity was evaluated at the end of the Project’s assumed 40-year license period. The projected number of visitors was estimated using county and state census population data from the U.S. Census Bureau (U.S. Census Bureau, 2022a and 2022b). The population change from 2010 to 2020 for Morrison County, Cass County, and the state of Minnesota was a 2.4%, 5.2%, and 7.6% increase, respectively. This equates to an average 5.1% increase in population in 10 years, or 22% increase over 40 years. The growth rate was applied to the current visitor counts to estimate the projected number of visitors. This increase was also applied to the site utilization scores, given the increased number of visitors. The number of projected vehicles was computed based on the current ratio of vehicles per visitor in the 2-hour survey period and compared to the available parking spaces. No increase in number of parking spaces was assumed. Predicted

capacity was evaluated using the same “Sufficient” and “Insufficient” designation as described above. Results of the existing capacity evaluation are presented in the following Table 4-2.

<b>Site</b>	<b>Avg. No. of Visitors (2-hr)</b>	<b>Visitors Per Recreation Day <sup>(1)</sup></b>	<b>% Increase in Visitors</b>	<b>Projected Site Utilization Score <sup>(2)</sup></b>	<b>Visitors per Vehicle</b>	<b>Avg. No. of Vehicles (2-hr)</b>	<b>No. of Parking Spots</b>	<b>Projected Capacity</b>
Alvah’s Landing	0.9	4	22%	1.8	1.8	0.5	10	Sufficient
Pillager Dam Public Boat Launch	8.5	43	22%	3.4	1.8	4.8	15	Sufficient
Pillager Dam Public Canoe Portage and Shorefishing Access	1.7	9	22%	3.3	3.3	0.5	1 <sup>(3)</sup>	Sufficient
Crow Wing River Canoe Campsite	0 <sup>(4)</sup>	0	22%	N/A <sup>(4)</sup>	0	0	0	Sufficient

- Notes: <sup>(1)</sup> A “recreation day” assumed to be one 10-hour day.  
<sup>(2)</sup> Site utilization scores ranged from 1 to 5, with 1 being underutilized and 5 being overcrowded.  
<sup>(3)</sup> Informal parking space for 1 or 2 vehicles at the site entrance (conservatively assume 1 available spot).  
<sup>(4)</sup> No visitors were observed, and no user surveys were completed for this site; therefore, minimal to no projected usage was assumed.

## 5.0 CONCLUSIONS

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The Recreation Use and Facility Inventory Study was completed in accordance with the Revised Study Plan for the relicensing of the Pillager Hydroelectric Project (Kleinschmidt, 2024). Data on site conditions, public usage, and visitor opinions was gathered over a series of site visits conducted from May through September 2024. Key findings and conclusions are summarized as follows:

### 5.1 RECREATION USE ASSESSMENT CONCLUSIONS

Results of the recreation usage observations, spot counts, and visitor surveys indicate that there is minimal usage of the Alvah's Landing and Crow Wing River Canoe Campsite. No users were observed or completed a survey at the canoe campsite. Recreation usage at the Pillager Dam Public Canoe Portage & Shorefishing Access was moderate, with all visitors observed to be fishing at the site. The most usage was observed at the Pillager Dam Public Boat Launch, with up to 16 visitors reported during one site visit. Activities at this site included boating, fishing, and picnicking.

Of the user surveys completed, all but one indicated sufficient recreation opportunities were offered. The sites were typically categorized as slightly under to moderately utilized, and minimal to no concerns for safety were identified. Overcrowding does not appear to be a concern at the recreation sites. The analysis of the user survey data indicates sufficient capacity at all recreation sites for both current and projected usage at the end of the license period. There appears to be adequate capacity for potential increases in recreation use at these sites.

### 5.2 FACILITY INVENTORY AND CONDITION ASSESSMENT CONCLUSIONS

The amenities at the recreation sites included roadways, parking areas, boat launches, fishing areas, pedestrian trails, and signage. Little to no signs of major degradation, vandalism, or disrepair were noted.

Items noted for maintenance or repair included parking lots and roadways at Alvah's Landing and the Pillager Dam Public Boat Launch, which were observed to have potholes and depressions that at time were holding water. Vegetation maintenance also appeared to be a common maintenance issue at the sites, with overgrown vegetation noted along roadways, at the Alvah's Landing boat launch, at the canoe campsites, and blocking signage. The vegetation overgrowth at the boat launches and canoe campsites could potentially hide the visitor's ability to find and use the amenities. Signage was generally in good condition and legible, except the portage trail marker at the Pillager Dam Public Canoe Portage and Shorefishing Access, which was noted to be rotted out and tipped over slightly.

Based on the user survey results, the site conditions were typically identified as satisfactory to good. This is generally consistent with the findings from the recreation facility inventory and condition assessment performed by Merjent.

## 6.0 REFERENCES

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Kleinschmidt Associates. 2024. Revised Study Plan, Little Falls Hydroelectric Project FERC P-2532, Sylvan Hydroelectric Project FERC P-2454, Pillager Hydroelectric Project FERC P-2663, e-filed: January 9, 2024.

U.S. Census Bureau. 2022a. QuickFacts: Little Falls city, Minnesota; Baxter city, Minnesota; Morrison County, Minnesota; Crow Wing County, Minnesota; Cass County, Minnesota; Minnesota. Available online at: <https://www.census.gov/quickfacts/fact/table/littlefallscityminnesota,baxtercityminnesota,morrisoncountyminnesota,crowwingcountyminnesota,casscountyminnesota,MN/PST045222>. Accessed January 2025.

U.S. Census Bureau. 2022b. American Community survey 5-year data (2009-2021). Census.gov. Available online at: <https://www.census.gov/data/developers/data-sets/acs-5year.html>. Accessed January 2025.

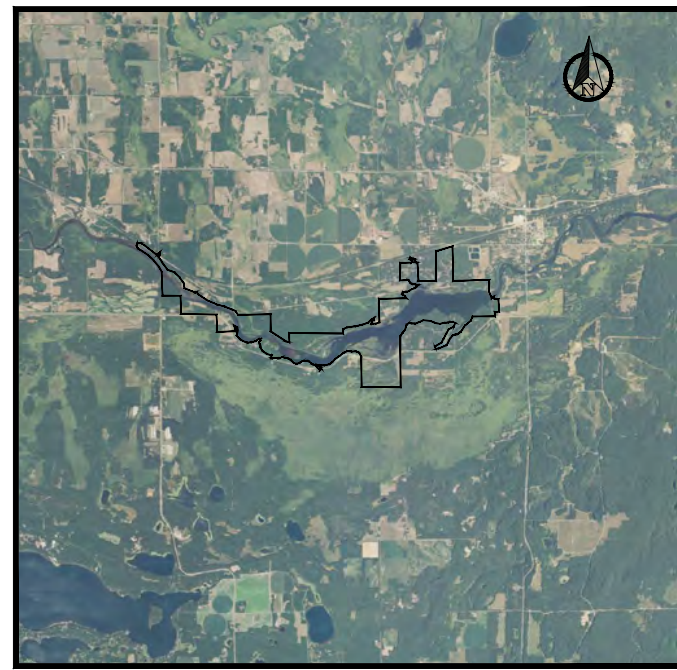


## **Appendix A - Site Locations and Aerial Overviews**

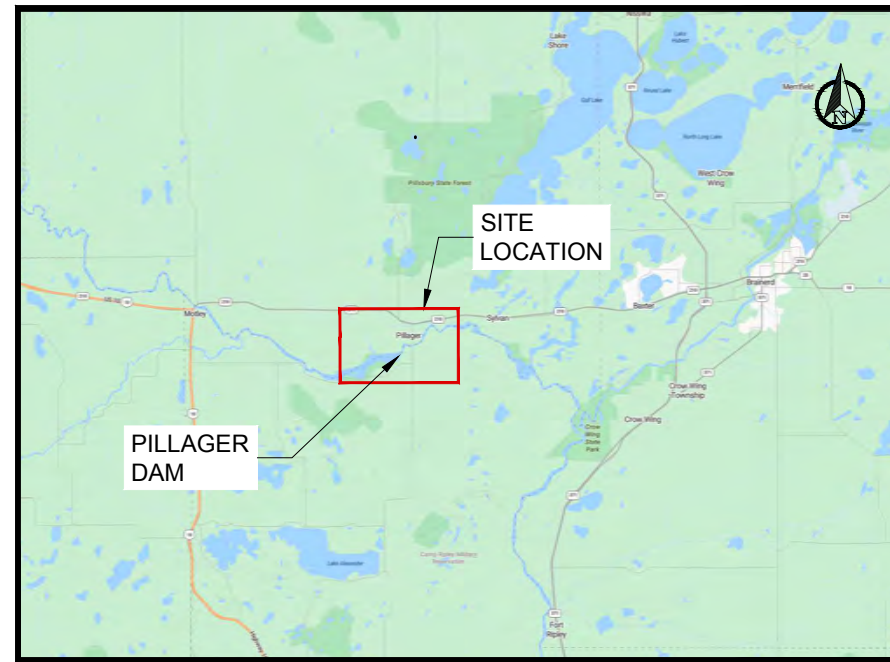
# PILLAGER HYDROELECTRIC PROJECT RECREATION USE & FACILITY INVENTORY STUDY

## FOR MINNESOTA POWER

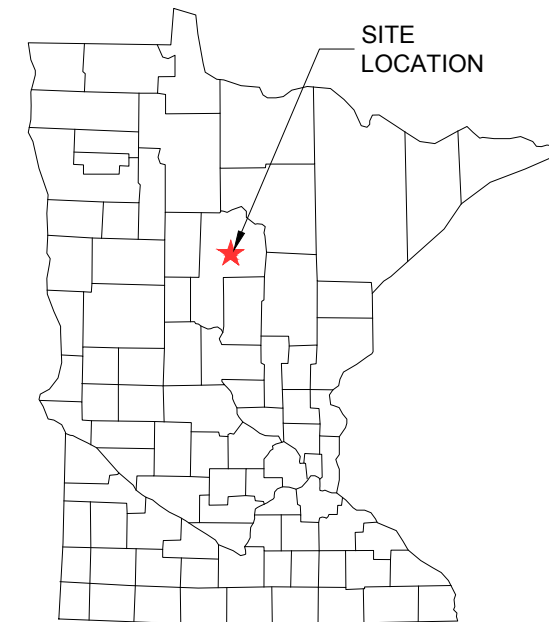
### CASS AND MORRISON COUNTIES, MINNESOTA



**VICINITY MAP**  
SCALE 1" = 7000'



**LOCATION MAP**  
NOT TO SCALE

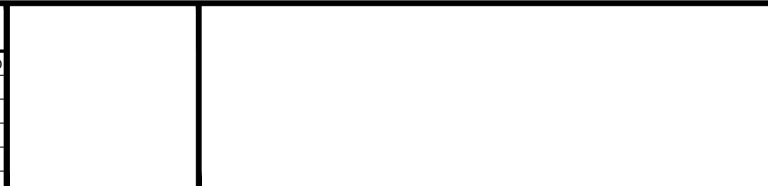


**STATE MAP**  
NOT TO SCALE

INDEX	NO.
TITLE SHEET	1
OVERVIEW	2
ALVAH'S LANDING	3
PILLAGER DAM PUBLIC BOAT LAUNCH	4
PILLAGER DAM CANOE PORTAGE AND SHOREFISHING ACCESS	5
CROW WING RIVER CAMPSITE	6



REVISION RECORD						
NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D	
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1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB		

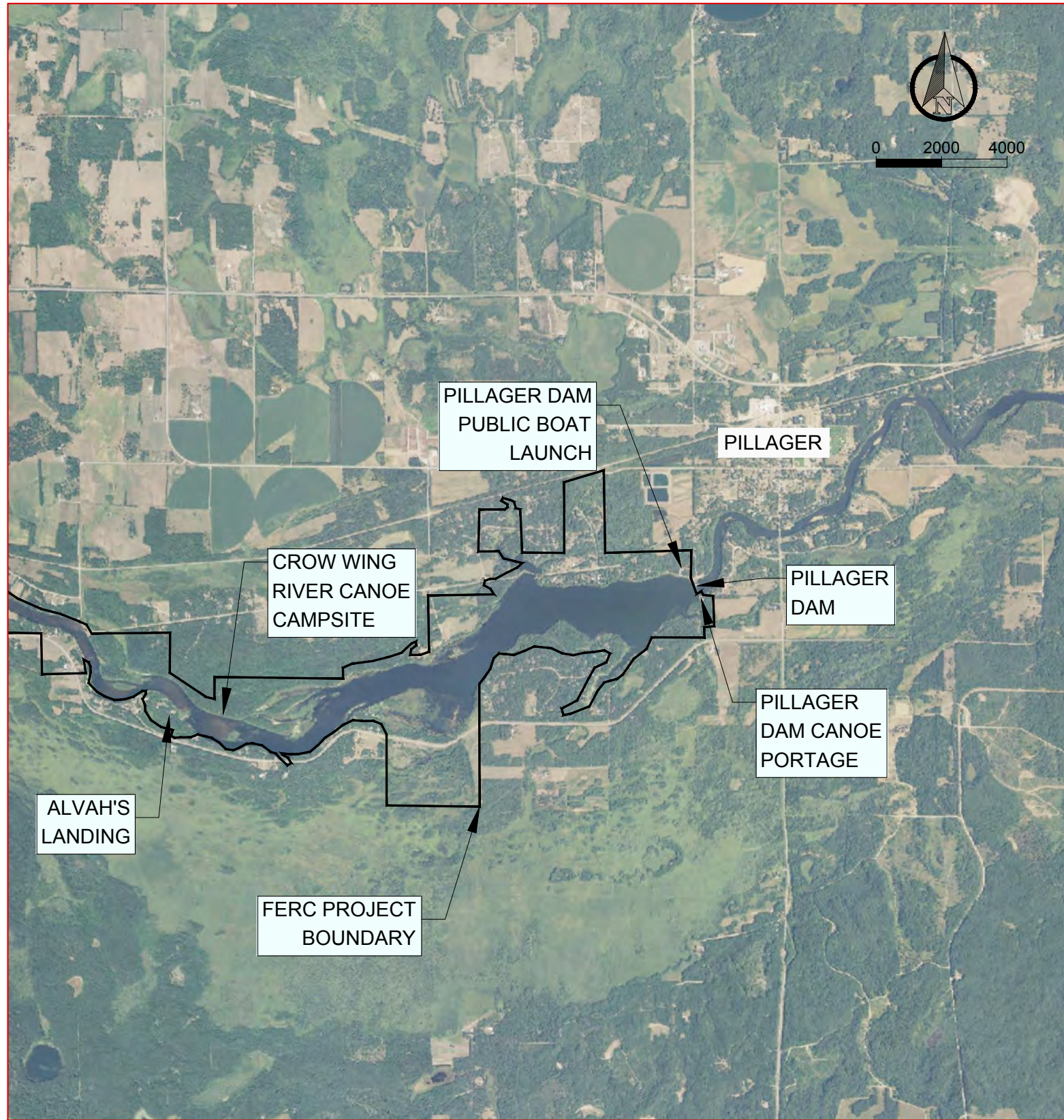


MINNESOTA POWER  
**PILLAGER HYDROELECTRIC PROJECT RECREATION USE & FACILITY INVENTORY STUDY**  
CASS AND MORRISON COUNTIES, MINNESOTA

TITLE SHEET

DRAWING NO.  
**C100**

SHEET 1 OF 6



# PILLAGER RECREATION SITES

**ALVAH'S LANDING:**

LOCATION: OFF AZALEA ROAD 3 MILES UPSTREAM OF PILLAGER DAM.  
 COORDINATES:  
 LATITUDE: 46°18'18.10"N  
 LONGITUDE: 94°32'51.78"W  
 DESCRIPTION: PARKING FOR APPROXIMATELY 10 VEHICLES AND A CONCRETE BOAT RAMP.  
 OWNER/OPERATOR: MINNESOTA DNR

**PILLAGER DAM PUBLIC BOAT LAUNCH:**

LOCATION: BOAT LAUNCH LOCATED ON THE NORTH SHORE OF PILLAGER RESERVOIR. OFF PILLAGER DAM RD.  
 COORDINATES:  
 LATITUDE: 46°19'0.94"N  
 LONGITUDE: 94°29'11.67"W  
 DESCRIPTION: PARKING FOR APPROXIMATELY 15 VEHICLES AND A CONCRETE BOAT RAMP.  
 OWNER/OPERATOR: MINNESOTA DNR AND MP

**PILLAGER DAM PUBLIC CANOE PORTAGE AND SHOREFISHING ACCESS:**

LOCATION: PORTAGE AROUND THE SOUTH END OF PILLAGER DAM. OFF AZALEA RD.  
 COORDINATES:  
 LATITUDE: 46°18'52.72"N  
 LONGITUDE: 94°29'4.36"W  
 DESCRIPTION: CANOE PORTAGE TRAIL AROUND THE SOUTH END OF PILLAGER DAM, APPROXIMATELY 300 FEET IN LENGTH. FISHING AREA SOUTH OF THE DAM.  
 OWNER/OPERATOR: MP

**CROW WING RIVER CANOE CAMPSITE:**

LOCATION: ACROSS THE RIVER OF ALVAH'S LANDING AND APPROXIMATELY 0.5 MILES DOWNSTREAM  
 COORDINATES:  
 LATITUDE: 46°18'25.85"N  
 LONGITUDE: 94°31'60.00"W  
 DESCRIPTION: TWO CANOE-UP PRIMITIVE CAMPSITES LOCATED APPROXIMATELY 2.5 MILES UPSTREAM OF THE PILLAGER DAM, JUST DOWNSTREAM AND ACROSS THE RIVER FROM ALVAH'S LANDING.  
 OWNER/OPERATOR: MP



Corporate Office:  
 1 Main Street SE, Suite 300  
 Minneapolis, Minnesota 55414  
 (612) 746-3660

Wisconsin Office:  
 126 N Speedway Lane, Bldg. E  
 Kaukauna, WI 54130  
 (920) 393-9198

**REVISION RECORD**

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D
0	OCT. 2024	EXHIBITS FOR RECREATION STUDY	AJ	EFB	
1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB	

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**PILLAGER HYDROELECTRIC PROJECT RECREATION USE & FACILITY INVENTORY STUDY**  
 CASS AND MORRISON COUNTIES, MINNESOTA

DRAWING NO.  
**C101**

OVERVIEW

SHEET 2 OF 6

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)



SITE OVERVIEW  
ALVAH'S LANDING



REVISION RECORD						
NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D	
0	OCT. 2024	EXHIBITS FOR RECREATION STUDY	AJ	EFB		
1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB		

MINNESOTA POWER  
**PILLAGER HYDROELECTRIC PROJECT RECREATION USE & FACILITY INVENTORY STUDY**  
 CASS AND MORRISON COUNTIES, MINNESOTA

DRAWING NO.  
**C102**

ALVAH'S LANDING

SHEET 3 OF 6

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)



SITE OVERVIEW  
PILLAGER DAM PUBLIC BOAT LAUNCH



REVISION RECORD						
NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D	
0	OCT. 2024	EXHIBITS FOR RECREATION STUDY	AJ	EFB		
1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB		

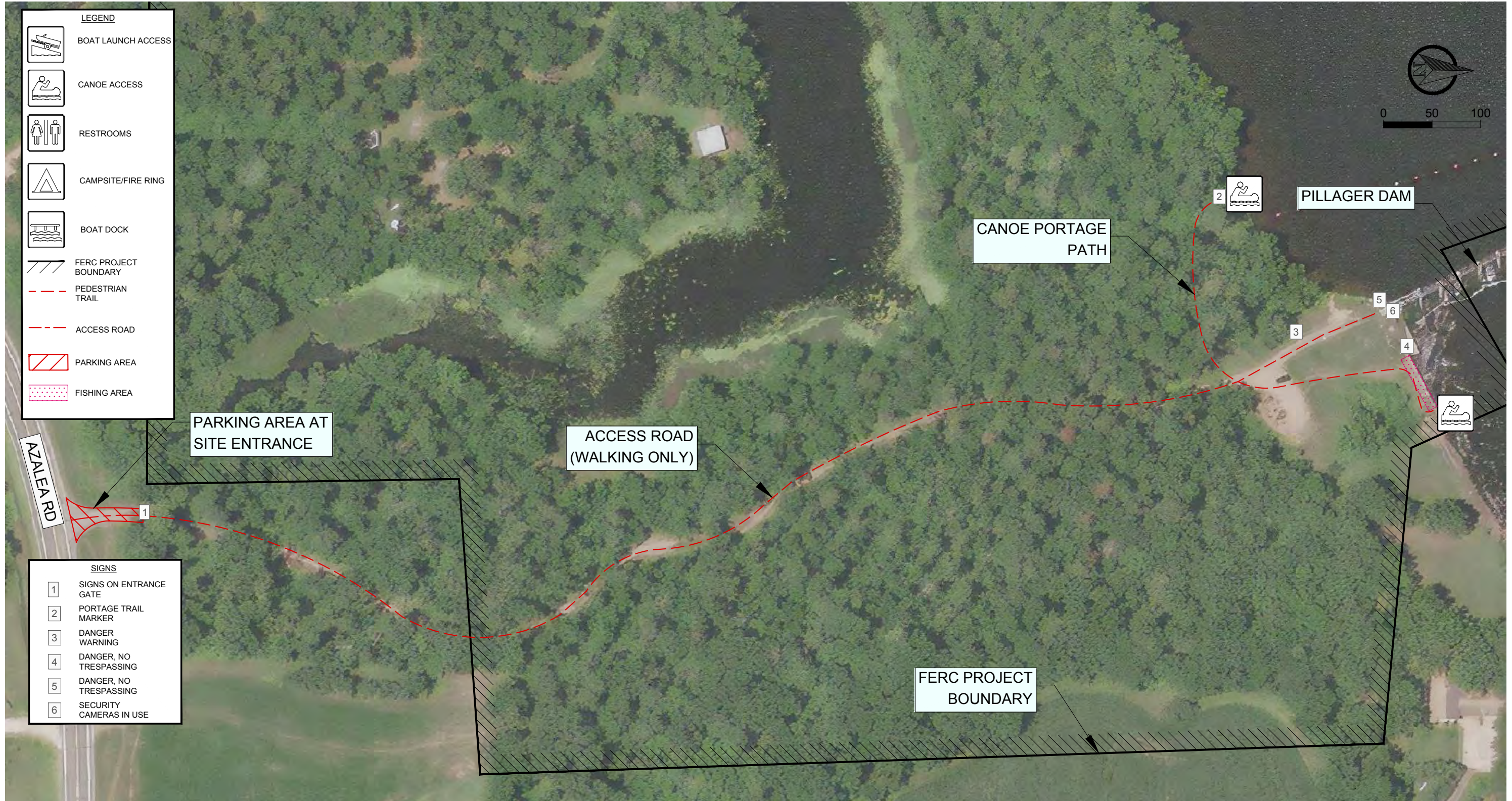
MINNESOTA POWER  
**PILLAGER HYDROELECTRIC PROJECT RECREATION USE & FACILITY INVENTORY STUDY**  
CASS AND MORRISON COUNTIES, MINNESOTA

PILLAGER DAM PUBLIC BOAT LAUNCH

DRAWING NO.  
**C103**

SHEET 4 OF 6

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)



**SITE OVERVIEW  
PILLAGER DAM PUBLIC CANOE PORTAGE &  
SHOREFISHING ACCESS**



Corporate Office:  
1 Main Street SE, Suite 300  
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(920) 393-9198

**REVISION RECORD**

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D
0	OCT. 2024	EXHIBITS FOR RECREATION STUDY	AJ	EFB	
1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB	

MINNESOTA POWER  
**PILLAGER HYDROELECTRIC PROJECT RECREATION USE &  
FACILITY INVENTORY STUDY**  
CASS AND MORRISON COUNTIES, MINNESOTA

**PILLAGER DAM PUBLIC CANOE PORTAGE  
AND SHOREFISHING ACCESS**

DRAWING NO.  
**C104**

SHEET 5 OF 6



SITE OVERVIEW  
CROW WING RIVER CANOE CAMPSITE



Corporate Office:  
1 Main Street SE, Suite 300  
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(612) 746-3660

Wisconsin Office:  
126 N Speedway Lane, Bldg. E  
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(920) 393-9198

REVISION RECORD						
NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D	
0	OCT. 2024	EXHIBITS FOR RECREATION STUDY	AJ	EFB		
1	DEC. 2024	EXHIBITS FOR RECREATION STUDY REVISIONS	AJ	EFB		

MINNESOTA POWER  
**PILLAGER HYDROELECTRIC PROJECT RECREATION USE & FACILITY INVENTORY STUDY**  
CASS AND MORRISON COUNTIES, MINNESOTA

DRAWING NO.  
**C105**

CROW WING RIVER CANOE CAMPSITE

SHEET 6 OF 6



## **Appendix B - Sample Data Collection Forms**

**Sylvan Project (P-2454), Pillager Project (P-2663)**

**Recreation Facility Inventory and Condition Assessment Form**

**Surveyor:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_

**Project:**  Sylvan  Pillager

**Sylvan Recreation Site:**  Wilder's Landing;  Fisherman's Bridge Boat Launch and Fishing Area;  
 Sylvan Dam Boat Access and Fishing Area;  Sylvan Canoe Portage

**Pillager Recreation Site:**  Alvah's Landing (Minnesota DNR Boat Launch);  Pillager Dam Public Boat Launch;  Pillager Dam Public Canoe Portage and Shorefishing Access;  Crow Wing River Canoe Campsite

**GPS Coordinates:** \_\_\_\_\_

\*Please note:

- 1) Photos of **all** facilities, amenities, signs, parking areas, roads, and areas of erosion should be taken. Location of each needs to be specified via GPS coordinates or on sketch.
- 2) If there is more than one facility/amenity of the same type, and they are in different conditions, this needs to be distinguished in notes on this form. Location of each needs to be specified via GPS coordinates or on sketch, and condition should be specified in some way to distinguish the varied conditions for the same facility/amenity type.
- 3) If there is not sufficient space on this form for notes, pages may be added as needed.

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**Site Type:**

Boat Launch Area       Fishing Area       Picnic Area  
 Trail       Campsite       Other: \_\_\_\_\_

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**Road Access:**      Condition Description (N-replace, R-repair, M-maintain, G-good):

# entrances \_\_\_\_\_ # lanes \_\_\_\_\_ Condition \_\_\_\_\_

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**Parking Area:**      Condition Description (N-replace, R-repair, M-maintain, G-good): \_\_\_\_\_

Type	# Estimated Spaces	Delineation
Designated Handicap Spaces	_____	<input type="checkbox"/> Signage
Regular Spaces	_____	
Vehicle & Trailer Spaces	_____	

Other Notes: \_\_\_\_\_

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**Site Amenities (if needed, please provide additional specifications on additional pages):**

#	Type	Condition (N-replace, R-repair, M-maintain, G-good) for each <sup>1</sup>
_____	Restrooms	_____
_____	Fishing Pier/Platform	_____
_____	Boat Launch	_____
_____	Boat Dock	_____
_____	Pedestrian Trail	_____
_____	Firepit/ring	_____
_____	Information Kiosk	_____
_____	Informational Signage	_____
_____	Safety Signage	_____
_____	Campsite (primitive)	_____
_____	Campsite (improved)	_____

Other (specify) \_\_\_\_\_  
\_\_\_\_\_

**Boat Launch:** Condition Description (N-replace, R-repair, M-maintain, G-good):  
\_\_\_\_\_

Hard surface    Gravel    Unimproved (informal)   \_\_\_\_\_ # of Lanes

Other notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Boat Dock / Fishing Pier:** Condition Description (N-replace, R-repair, M-maintain, G-good):  
\_\_\_\_\_

Boat Dock (can secure boat to platform)    Fishing Pier (cannot secure boat to platform)

Other notes (include dimensions): \_\_\_\_\_  
\_\_\_\_\_

**Trails (within the recreation site):** Condition Description (N-replace, R-repair, M-maintain, G-good)

Type: \_\_\_\_\_ Condition: \_\_\_\_\_  
Type: \_\_\_\_\_ Condition: \_\_\_\_\_  
Type: \_\_\_\_\_ Condition: \_\_\_\_\_

Other notes: \_\_\_\_\_  
\_\_\_\_\_

<sup>1</sup> If more than one and different conditions, distinguish the condition/location of each. Can label by number and indicate on sketch. If all are the same condition, don't need to specify with label.

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**Signage / Interpretive Information:** Condition Description (N-replace, R-repair, M-maintain, G-good)

- Part 8                      Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Trail Markers              Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Historical                      Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Fishing Regulations      Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Boating Safety              Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_
- Informational              Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_ Content: \_\_\_\_\_
- Other: \_\_\_\_\_ Quantity: \_\_\_\_\_ Condition: \_\_\_\_\_

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**Restrooms:**                                      Condition Description (N-replace, R-repair, M-maintain, G-good)

# Flush: \_\_\_\_\_ # Portable: \_\_\_\_\_ Condition: \_\_\_\_\_

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**Erosion:**

- Areas of noticeable erosion, slumping, or other forms of instability

**Description of Erosion:**

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**Evidence of use at site:** \_\_\_\_\_

(C) Compaction, (E) Erosion, (L) Litter, (UI) Unauthorized improvements, (V) Vandalism, (O) Other (Specify)

**Evidence of overcrowding:** \_\_\_\_\_

(A) Anecdotal information, (I) Improper parking, (SD) Site degradation, (U) Unauthorized sites, (W) Waiting lines, (O) Other (Specify)

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**Notes (including general condition, any restrictions/alerts, invasive species, etc.):**

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**Sketch of Site, including all facilities and amenities:**

**Sylvan Project (P-2454), Pillager Project (P-2663)**  
**Recreational Observations / Spot Counts**

**Observer:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Start time:** \_\_\_\_\_ **End time:** \_\_\_\_\_

**Weather:**  Sunny;  Partly Cloudy;  Cloudy;  Light Rain;  Heavy Rain

**Approximate Temperature (°F):** \_\_\_\_\_

**1. Project:**  Sylvan  Pillager

**2. Sylvan Recreation Site:**

- Wilder's Landing
- Fisherman's Bridge Boat Launch and Fishing Area
- Sylvan Dam Boat Access and Fishing Area
- Sylvan Canoe Portage

**3. Pillager Recreation Site:**

- Alvah's Landing (Minnesota DNR Boat Launch)
- Pillager Dam Public Boat Launch
- Pillager Dam Public Canoe Portage and Shorefishing Access

**4. Number of People Observed:** \_\_\_\_\_ (Time of spot count: \_\_\_\_\_)

**5. Number of Vehicles Observed:** \_\_\_\_\_ (Time of spot count: \_\_\_\_\_)

**6. Observed Activities:**

- Fishing from the shore
- Fishing from a boat
- Motorized boating
- Canoe / Kayaking / Stand-up Paddle Boarding
- Waterskiing / Wakeboarding / Tubing
- Swimming
- Hiking / Walking / Jogging
- Bicycling
- Picnicking
- Camping
- Viewing Wildlife / Birdwatching
- Photography
- Other: \_\_\_\_\_

**7. Notes:**

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**Sylvan Project (P-2454), Pillager Project (P-2663)**

**Recreational Use Survey Form**

A. **Observer:** \_\_\_\_\_

B. **Date:** \_\_\_\_\_

C. **Time:** \_\_\_\_\_

D. **Project:**  Sylvan  Pillager

E. **Sylvan Recreation Site:**

- Wilder's Landing
- Fisherman's Bridge Boat Launch and Fishing Area
- Sylvan Dam Boat Access and Fishing Area
- Sylvan Canoe Portage

**Pillager Recreation Site:**

- Alvah's Landing (Minnesota DNR Boat Launch)
- Pillager Dam Public Boat Launch
- Pillager Dam Public Canoe Portage and Shorefishing Access

**1. The purpose of the survey is to obtain information about recreation user experience at the site and to determine adequacy of the site. This recreational use survey is in association with the relicensing process for the Sylvan and Pillager Hydroelectric Projects. The survey will take approximately 5 minutes and is completely anonymous. No personal information will be collected. Would you be willing to participate in the survey?**

Yes  No

**2. Including yourself, how many people are in your party today?** \_\_\_\_\_

**3. Of the activities listed above, please indicate which is the primary activity of this trip?**  
(Choose only one)

- Fishing from the shore
- Fishing from a boat
- Motorized boating
- Canoe / Kayaking / Stand-up Paddle Boarding
- Waterskiing / Wakeboarding / Tubing
- Swimming
- Hiking / Walking / Jogging
- Bicycling
- Picnicking
- Camping
- Viewing Wildlife / Birdwatching
- Photography
- Other: \_\_\_\_\_

4. On a scale from 1 to 5, with 1 being underutilized and 5 overcrowded, how much do you perceive this site is used for recreation? (Circle one number)

1	2	3	4	5
Underutilized		Moderate		Overcrowded

5. In your opinion, are the amount and types of recreation opportunities offered at this site sufficient?

Yes;  No;  N/A

*If no, please explain:*

---

6. On a scale from 1 to 5, with 1 being poor and 5 excellent, how would you rate the overall condition of this site? (Circle one number)

1	2	3	4	5
Poor	Fair	Satisfactory	Good	Excellent

*If your rating is 1-2, please explain:*

---

7. Do you have any concerns of safety at this site?

Yes;  No;  N/A

*If yes, please explain:*

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8. Do you have any additional comments about public recreation opportunities and facilities at this recreation site? (Please be as specific as possible):

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**Thank you for participating in this survey!**

Sylvan Project (P-2454), Pillager Project (P-2663)

Recreational Use Survey Form – Crow Wing River Canoe Campsite

A. Date: \_\_\_\_\_

B. Time: \_\_\_\_\_

1. The purpose of the survey is to obtain information about recreation user experience at the site and to determine adequacy of the Crow Wing River Canoe Campsite. This recreational use survey is in association with the relicensing process for the Sylvan and Pillager Hydroelectric Projects. The answers to your responses should be specific to the Crow Wing River Canoe Campsite. If there are multiple people in your party, we ask that only one individual per party completes this form.

2. a) Including yourself, how many people are in your party today? \_\_\_\_\_

Please note that only one individual per party should complete the form.

b) What is the duration of your current visit (number of days/nights)? \_\_\_\_\_

3. Of the activities listed above, please indicate which is the primary activity of this trip (Choose only one):

- Fishing from the shore
- Fishing from a boat
- Motorized boating
- Canoe / Kayaking / Stand-up Paddle Boarding
- Waterskiing / Wakeboarding / Tubing
- Swimming
- Hiking / Walking / Jogging
- Bicycling
- Picnicking
- Camping
- Viewing Wildlife / Birdwatching
- Photography
- Other: \_\_\_\_\_

4. On a scale from 1 to 5, with 1 being underutilized and 5 overcrowded, how much do you perceive this site is used for recreation? (Circle one number)

1	2	3	4	5
Underutilized		Moderate		Overcrowded

5. In your opinion, are the amount and types of recreation opportunities offered at this site sufficient?

- Yes;  No;  N/A

If no, please explain:

\_\_\_\_\_

6. On a scale from 1 to 5, with 1 being poor and 5 excellent, how would you rate the overall condition of this site? (Circle one number)

1	2	3	4	5
Poor	Fair	Satisfactory	Good	Excellent

*If your rating is 1-2, please explain:*

---

7. Do you have any concerns of safety at this site?

Yes;  No;  N/A

*If yes, please explain:*

---

8. Are there any modifications to the site that you think should be made?

Yes;  No;  N/A

*If yes, please explain:*

---

9. Do you have any additional comments about public recreation opportunities and facilities at this recreation site? (Please be as specific as possible):

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**Thank you for participating in this survey!**



## **Appendix C - Survey Data Forms and Photos**



***Alvah's Landing***

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Alvah's Landing

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-05-25	START TIME 08:22
END TIME 10:00	PROJECT Pillager	SITE NAME Alvah's Landing

#### RECREATIONAL OBSERVATION FORM

WEATHER Light Rain	TEMPERATURE 49	NUMBER OF PEOPLE OBSERVED 1	NUMBER OF VEHICLES OBSERVED 1
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other: Passerby, drove in and drove out

##### NOTES

One vehicle drove in, completed a form, but then immediately left.

#### SURVEY SUMMARY

AVERAGE SITE UTILIZATION 2	SUFFICIENT OPPORTUNITIES TALLY <b>Yes: 1 No: 0</b>	AVERAGE CONDITION 3	SAFETY CONCERNS TALLY <b>Yes: 0 No: 1</b>
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#### RECREATIONAL USER SURVEY FORM

##### ALVAH'S LANDING: SURVEY 1

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. ---	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 2
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 3	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Tree/branches blown partially onto roadway. Potholes/ponding along roadway.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

Pillager

Alvah's Landing

## BACKGROUND

OBSERVER NAME  
Amanda Carlson

DATE  
2024-06-12

START TIME  
10:10

END TIME  
12:10

PROJECT  
Pillager

SITE NAME  
Alvah's Landing

## RECREATIONAL OBSERVATION FORM

WEATHER  
Sunny

TEMPERATURE  
64

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

### NOTES

No activity during survey time.

## SURVEY SUMMARY

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

**Pillager**

**Alvah's Landing**

## BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-06-23

START TIME  
08:00

END TIME  
10:00

PROJECT  
Pillager

SITE NAME  
Alvah's Landing

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
65

NUMBER OF PEOPLE OBSERVED  
1

NUMBER OF VEHICLES OBSERVED  
1

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other: Drive in/out

### NOTES

One vehicle drove in and drove out

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

**Pillager**

**Alvah's Landing**

## BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-07-05

START TIME  
12:02

END TIME  
14:06

PROJECT  
Pillager

SITE NAME  
Alvah's Landing

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
73

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

No people observed during time onsite.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

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# RECREATIONAL OBSERVATIONS/SPOT COUNTS

**Pillager**

**Alvah's Landing**

## BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-07-24

START TIME  
09:27

END TIME  
11:27

PROJECT  
Pillager

SITE NAME  
Alvah's Landing

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
67

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

### NOTES

Early morning and the boat launch may have been reasons for no traffic.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

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# RECREATIONAL OBSERVATIONS/SPOT COUNTS

**Pillager**

**Alvah's Landing**

## BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-08-13

START TIME  
15:10

END TIME  
17:10

PROJECT  
Pillager

SITE NAME  
Alvah's Landing

## RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
77

NUMBER OF PEOPLE OBSERVED  
2

NUMBER OF VEHICLES OBSERVED  
1

### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other: Drove in/drove out

### NOTES

One vehicle drove in and out.

## SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

## RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Alvah's Landing

#### BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-09-01	START TIME 10:15
END TIME 12:15	PROJECT Pillager	SITE NAME Alvah's Landing

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 61	NUMBER OF PEOPLE OBSERVED 1	NUMBER OF VEHICLES OBSERVED 0
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

I met one neighbor of the property walking their dog. He expressed interest in purchasing the property.

#### SURVEY SUMMARY

##### Primary Activities by Type

Hiking/Walking/Jogging:

1

AVERAGE SITE UTILIZATION 1	SUFFICIENT OPPORTUNITIES TALLY Yes: 1 No: 0	AVERAGE CONDITION 3	SAFETY CONCERNS TALLY Yes: 0 No: 1
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#### RECREATIONAL USER SURVEY FORM

##### ALVAH'S LANDING: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Hiking/Walking/Jogging	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 1
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 3	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Previously was part of their property and would like to buy it back. A garbage can would be nice.

# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Pillager

### Alvah's Landing

#### GENERAL

SURVEYOR NAME  
Austin Johnson

DATE  
2024-09-01

TIME  
10:27

PROJECT  
Pillager

SITE NAME  
Alvah's Landing

LOCATION  
46.305065634703546, -94.54818452717228

SITE TYPE  
 Boat Launch Area  
 Campsite  
 Fishing Area  
 Picnic Area  
 Trail  
 Other:

EVIDENCE OF USE AT SITE  
 Compaction  
 Erosion  
 Litter  
 Unauthorized Improvements  
 Vandalism  
 Other:

EVIDENCE OF OVERCROWDING  
 Anecdotal Information  
 Improper Parking  
 Site Degradation  
 Unauthorized sites  
 Waiting Lines  
 Other:

#### AMENITIES AT SITE

Restrooms  Fishing Pier/Platform  Boat Launch  Boat Dock  Pedestrian Trail  Firepit/ring  Information Kiosk  
 Informational Signage  Safety Signage  Campsite (Primitive)  Campsite (Improved)

#### GENERAL NOTES

The launch area is slightly overgrown along with the parking lot. The potholes along the access road are 2-3" deep.

#### PHOTOS



Date: 2024-12-20  
Location: 46.3052°, -94.5478°  
Description: Access road

09/01/2024 10:35:44

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-20  
Location: 46.3052°, -94.5478°  
Description: Parking area



Date: 2024-12-20  
Location: 46.3052°, -94.5478°  
Description: Parking area



Date: 2024-12-20  
Location: 46.3052°, -94.5478°  
Description: Parking area

## GENERAL PHOTOS (CONTINUED)

---



Date: 2024-12-20  
Location: 46.3052°, -94.5476°  
Description: Boat launch

## EROSION OBSERVATIONS

ARE THERE AREAS OF NOTICEABLE EROSION, SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

### EROSION DESCRIPTION

Some significant potholes in the access road, along with some depressions around the parking lot.

## PHOTOS



Date: 2024-09-01

Location: 46.3052°, -94.5478°

Description: Depression on the east side of the parking lot



Date: 2024-09-01

Location: 46.3052°, -94.5478°

Description: Depression on the east side of the parking lot

## EROSION PHOTOS (CONTINUED)

---



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Potholes along the access road



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Potholes along the access road



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Potholes along the access road

## EROSION PHOTOS (CONTINUED)

---



Date: 2024-09-01

Location: 46.3052°, -94.5478°

Description: Potholes along the access road

## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE  
1

NUMBER OF LANES ON ACCESS ROADS  
1

ROAD CONDITION  
M = Needs maintenance (Facility needs maintenance, such as cleaning or painting)

### ROAD CONDITION NOTES

Some significant potholes along the access road.

## PHOTOS



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: West side of the parking lot looking at the access road



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Access road looking south

## ACCESS ROAD PHOTOS (CONTINUED)

---



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Access road looking south



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Access road looking south



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Access road looking south

**ACCESS ROAD PHOTOS (CONTINUED)**

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Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Access road looking south



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Entrance to the access road



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Entrance to the access road

## PARKING AREA OBSERVATIONS

PARKING AREA CONDITION  
M - Needs maintenance

PARKING CONDITION NOTES  
Potholes and depressions along the edge of the parking area

NUMBER OF DESIGNATED HANDICAP SPACES  
0

IS THERE SIGNAGE DELINEATING HANDICAP SPACES?  
 Yes  No

NUMBER OF REGULAR SPACES  
5

NUMBER OF VEHICLE & TRAILER SPACES  
5

## PHOTOS



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Parking area looking west



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Parking area looking west

**PARKING PHOTOS (CONTINUED)**

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Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Parking area looking east



Date: 2024-09-01  
Location: 46.3052°, -94.5478°  
Description: Parking area looking east

## BOAT LAUNCH OBSERVATIONS

### BOAT LAUNCH ID

Pillager\_Alvah's Landing\_BL-1

### BOAT LAUNCH SURFACE

- Hard Surface
- Gravel
- Unimproved (informal)

### BOAT LAUNCH CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### NUMBER OF LANES ON BOAT LAUNCH

1

### BOAT LAUNCH NOTES

The launch area seems slightly overgrown both on shore and within the river. It appears someone recently cut a path from the launch to open water.

## PHOTOS



Date: 2024-09-01  
Location: 46.3052°, -94.5476°  
Description: Boat launch area  
Photo Type: BL



Date: 2024-09-01  
Location: 46.3053°, -94.5475°  
Description: Newly cut path from the boat launch.  
Photo Type: BL

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Pillager\_Alvah's Landing\_IS-1

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

Public Water Access

## PHOTOS



Date: 2024-09-01  
Location: 46.3030°, -94.5483°  
Description: Access sign from the road  
Photo Type: IS



Date: 2024-09-01  
Location: 46.3029°, -94.5482°  
Description: Access sign from the road  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Pillager\_Alvah's Landing\_IS-2

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3051°, -94.5483°  
Description: Aquatic Hitchhiker sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Pillager\_Alvah's Landing\_IS-3

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

This sign board has no signs posted on it. The board itself is in good condition.

## PHOTOS

---



Date: 2024-12-20  
Location: 46.3052°, -94.5476°  
Description: Empty sign board  
Photo Type: IS



*Recreation Use and Facility Inventory Study  
Pillager Hydroelectric Project  
Cass and Morrison Counties, MN  
February 2025*

## ***Pillager Dam Public Boat Launch***

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Boat Launch

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-05-25	START TIME 10:21
END TIME 12:25	PROJECT Pillager	SITE NAME Pillager Dam Public Boat Launch

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 62	NUMBER OF PEOPLE OBSERVED 5	NUMBER OF VEHICLES OBSERVED 4
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

Observed 4 boaters loading/unloading. One of the survey participants is a frequent visitor and recommended fill near launch pad. The depression holds water, litter, and is a breeding ground for mosquitoes.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from a boat:

2

AVERAGE SITE UTILIZATION 3.5	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION 3.5	SAFETY CONCERNS TALLY Yes: 0 No: 2
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#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Near the boat launch there is a depression that holds water, collects litter and is a breeding ground for mosquitoes. Could use fill to help the issue. The parking area has minor potholes. \*\*Person surveyed comes to the boat launch 20-30 times a year.

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
4

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Potholes in parking area.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Boat Launch

#### BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-06-11

START TIME  
14:31

END TIME  
16:31

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Boat Launch

#### RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
73

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

#### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

#### NOTES

No activity during survey time.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

#### RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Boat Launch

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-06-22	START TIME 08:00
END TIME 10:00	PROJECT Pillager	SITE NAME Pillager Dam Public Boat Launch

#### RECREATIONAL OBSERVATION FORM

WEATHER Light Rain	TEMPERATURE 63	NUMBER OF PEOPLE OBSERVED 4	NUMBER OF VEHICLES OBSERVED 2
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##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

Two locals fishing from boat surveyed. Observed two other people fishing from shore.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from a boat:

1

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 1 No: 0	AVERAGE CONDITION 4	SAFETY CONCERNS TALLY Yes: 0 No: 1
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#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from a boat	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

A restroom would be much appreciated. The road gets bumpy through summertime. Overall, the site is great

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Boat Launch

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-07-05	START TIME 08:00
END TIME 10:00	PROJECT Pillager	SITE NAME Pillager Dam Public Boat Launch

#### RECREATIONAL OBSERVATION FORM

WEATHER Partly Cloudy	TEMPERATURE 63	NUMBER OF PEOPLE OBSERVED 8	NUMBER OF VEHICLES OBSERVED 4
--------------------------	-------------------	--------------------------------	----------------------------------

#### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

#### NOTES

---

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from a boat:	1
Picnicking:	1
Fishing from the shore:	1

AVERAGE SITE UTILIZATION 3.3333333333333335	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION 3.3333333333333335	SAFETY CONCERNS TALLY Yes: 0 No: 3
--	--	---	---------------------------------------

#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

The road is in pretty rough shape. Overall great boat landing.

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Picnicking

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
4

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Great place to come when we're in town. Would be great to have a garbage can on location.

### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 3

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

3

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

4

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Great place to fish.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Boat Launch

#### BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-07-24	START TIME 13:57
END TIME 15:57	PROJECT Pillager	SITE NAME Pillager Dam Public Boat Launch

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 77	NUMBER OF PEOPLE OBSERVED 15	NUMBER OF VEHICLES OBSERVED 8
------------------	-------------------	---------------------------------	----------------------------------

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

One group said they already filled out a form. Two groups weren't interested in filling out the form. Three vehicles launched boats. Four vehicles came in and turned around. 1 came with her granddaughter to check out the dock and play in the water.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from a boat: 1

Fishing from the shore: 1

AVERAGE SITE UTILIZATION 2	SUFFICIENT OPPORTUNITIES TALLY Yes: 2 No: 0	AVERAGE CONDITION ---	SAFETY CONCERNS TALLY Yes: 0 No: 2
-------------------------------	--	--------------------------	---------------------------------------

#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from a boat	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 3
---	--	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? ---	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
---

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 2	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 1
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
---	--

CONDITION OF THIS SITE?

4

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Boat Launch

#### BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-08-14

START TIME  
08:49

END TIME  
10:49

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Boat Launch

#### RECREATIONAL OBSERVATION FORM

---

WEATHER  
Cloudy

TEMPERATURE  
68

NUMBER OF PEOPLE OBSERVED  
1

NUMBER OF VEHICLES OBSERVED  
1

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other: Drive in and out

##### NOTES

One drove in, made a phone call, then left. I couldn't get a survey.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION  
---

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION  
---

SAFETY CONCERNS TALLY

#### RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Boat Launch

#### BACKGROUND

OBSERVER NAME	DATE	START TIME
Austin Johnson	2024-08-31	16:13
END TIME	PROJECT	SITE NAME
18:13	Pillager	Pillager Dam Public Boat Launch

#### RECREATIONAL OBSERVATION FORM

WEATHER	TEMPERATURE	NUMBER OF PEOPLE OBSERVED	NUMBER OF VEHICLES OBSERVED
Sunny	81	16	8

#### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

#### NOTES

A few vehicles drove in and out.

#### SURVEY SUMMARY

##### Primary Activities by Type

Motorized boating:	2
Fishing from a boat:	1
Hiking/Walking/Jogging:	1

AVERAGE SITE UTILIZATION	SUFFICIENT OPPORTUNITIES TALLY	AVERAGE CONDITION	SAFETY CONCERNS TALLY
2.25	Yes: 4 No: 0	2.5	Yes: 0 No: 4

#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
3

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Motorized boating

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
2

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
The potholes need attention

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Would like a restroom

##### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
3

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from a boat

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
The potholes need attention.

### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 3

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

1

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Hiking/Walking/Jogging

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

2

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
The parking lot should be smoother

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
---

### PILLAGER DAM PUBLIC BOAT LAUNCH: SURVEY 4

*THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?*

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?

2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.

Motorized boating

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?

2

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
---

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?

3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Parking area is a little rough.

# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Pillager

### Pillager Dam Public Boat Launch

#### GENERAL

SURVEYOR NAME  
Austin Johnson

DATE  
2024-08-31

TIME  
16:14

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Boat Launch

LOCATION  
46.317098150072916, -94.48659941562869

#### SITE TYPE

- Boat Launch Area
- Campsite
- Fishing Area
- Picnic Area
- Trail
- Other:

#### EVIDENCE OF USE AT SITE

- Compaction
- Erosion
- Litter
- Unauthorized Improvements
- Vandalism
- Other:

#### EVIDENCE OF OVERCROWDING

- Anecdotal Information
- Improper Parking
- Site Degradation
- Unauthorized sites
- Waiting Lines
- Other:

#### AMENITIES AT SITE

- Restrooms
- Fishing Pier/Platform
- Boat Launch
- Boat Dock
- Pedestrian Trail
- Firepit/ring
- Information Kiosk
- Informational Signage
- Safety Signage
- Campsite (Primitive)
- Campsite (Improved)

#### GENERAL NOTES

There are significant depressions and potholes throughout the parking lot and access road.

#### PHOTOS



Date: 2024-12-20  
Location: 46.3174°, -94.4864°  
Description: Entrance road

## GENERAL PHOTOS (CONTINUED)

---



Date: 2024-12-20  
Location: 46.3171°, -94.4866°  
Description: Parking area



Date: 2024-12-20  
Location: 46.3171°, -94.4866°  
Description: Parking area



Date: 2024-12-20  
Location: 46.3167°, -94.4865°  
Description: Boat launch

## EROSION OBSERVATIONS

ARE THERE AREAS OF NOTICEABLE EROSION, SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

### EROSION DESCRIPTION

Some large depressions along the access road and launch area. There are also numerous potholes and some rill erosion.

## PHOTOS



Date: 2024-08-31  
Location: 46.3168°, -94.4867°  
Description: Depression around the parking lot



Date: 2024-08-31  
Location: 46.3167°, -94.4866°  
Description: Large depression, near the landing area

## EROSION PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3173°, -94.4867°  
Description: Depression around the parking area



Date: 2024-08-31  
Location: 46.3174°, -94.4862°  
Description: Pothole along the access road



Date: 2024-08-31  
Location: 46.3174°, -94.4860°  
Description: Potholes along the access road

## EROSION PHOTOS (CONTINUED)

---



Date: 2024-08-31

Location: 46.3173°, -94.4856°

Description: Large depression along the access road

## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE  
1

NUMBER OF LANES ON ACCESS ROADS  
2

ROAD CONDITION  
M = Needs maintenance (Facility needs maintenance, such as cleaning or painting)

ROAD CONDITION NOTES  
Many potholes and depressions

### PHOTOS



Date: 2024-08-31  
Location: 46.3173°, -94.4867°  
Description: Access road from the parking lot



Date: 2024-08-31  
Location: 46.3174°, -94.4864°  
Description: Access road from the parking lot

## ACCESS ROAD PHOTOS (CONTINUED)

---



Date: 2024-08-31  
Location: 46.3173°, -94.4855°  
Description: Access road east of the parking lot

## PARKING AREA OBSERVATIONS

PARKING AREA CONDITION  
M - Needs maintenance

PARKING CONDITION NOTES  
Needs some grading work

NUMBER OF DESIGNATED HANDICAP SPACES  
2

IS THERE SIGNAGE DELINEATING HANDICAP SPACES?  
 Yes  No

NUMBER OF REGULAR SPACES  
5

NUMBER OF VEHICLE & TRAILER SPACES  
10

## PHOTOS



Date: 2024-08-31  
Location: 46.3171°, -94.4866°  
Description: Parking area looking south



Date: 2024-08-31  
Location: 46.3171°, -94.4866°  
Description: Parking area looking south

**PARKING PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3171°, -94.4866°  
Description: Parking area looking north



Date: 2024-08-31  
Location: 46.3171°, -94.4866°  
Description: Parking area looking north



Date: 2024-08-31  
Location: 46.3168°, -94.4866°  
Description: Handicap parking sign

**PARKING PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3169°, -94.4867°  
Description: Handicap parking sign

## BOAT LAUNCH OBSERVATIONS

BOAT LAUNCH ID

Pillager\_Pillager Dam Public Boat Launch\_BL-1

BOAT LAUNCH SURFACE

- Hard Surface
- Gravel
- Unimproved (informal)

BOAT LAUNCH CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

NUMBER OF LANES ON BOAT LAUNCH

1

BOAT LAUNCH NOTES

---

## PHOTOS



Date: 2024-08-31  
Location: 46.3167°, -94.4865°  
Description: Boat launch area  
Photo Type: BL



Date: 2024-08-31  
Location: 46.3166°, -94.4866°  
Description: Boat launch area  
Photo Type: BL

## BOAT DOCK OBSERVATIONS

### BOAT DOCK ID

Pillager\_Pillager Dam Public Boat  
Launch\_BD-1

### BOAT DOCK TYPE

- Boat Dock (can secure boat to platform)  
 Fishing Pier (cannot secure boat to platform)

### BOAT DOCK CONDITION

- N - Needs to be replaced  
 R - Needs to be repaired  
 M - Needs maintenance  
 G - Good condition

### BOAT DOCK NOTES

There is a significant gap below the ramp for the boat dock.

## PHOTOS



Date: 2024-08-31  
Location: 46.3166°, -94.4865°  
Description: Boat dock  
Photo Type: BD



Date: 2024-08-31  
Location: 46.3166°, -94.4865°  
Description: Gap on the ramp of the boat dock  
Photo Type: BD

## PEDESTRIAN TRAIL OBSERVATIONS

PEDESTRIAN TRAIL ID

Pillager\_Pillager Dam Public Boat Launch\_PT-1

PEDESTRIAN TRAIL CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

PEDESTRIAN TRAIL CONDITION NOTES

---

## PHOTOS



Date: 2024-08-31  
Location: 46.3167°, -94.4865°  
Description: Mowed trail towards the dam  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3167°, -94.4866°  
Description: Mowed trail west of the parking area  
Photo Type: PT

**PEDESTRIAN TRAIL PHOTOS (CONTINUED)**

---



Date: 2024-08-31  
Location: 46.3167°, -94.4869°  
Description: Mowed trail west of the parking area  
Photo Type: PT



Date: 2024-08-31  
Location: 46.3167°, -94.4871°  
Description: Mowed trail west of the parking area  
Photo Type: PT

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Pillager\_Pillager Dam Public Boat Launch\_IS-  
1

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-08-31

Location: 46.3167°, -94.4865°

Description: Aquatic hitchhiker sign and project sign

Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

---

INFORMATIONAL SIGN ID

Pillager\_Pillager Dam Public Boat Launch\_IS-  
2

WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SIGNAGE CONDITION NOTES

---

## PHOTOS

---



Date: 2024-12-20  
Location: 46.3173°, -94.4855°  
Description: Launch entrance sign  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Pillager\_Pillager Dam Public Boat Launch\_IS-3

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

Slightly overgrown

## PHOTOS



Date: 2024-12-20  
Location: 46.3166°, -94.4866°  
Description: Invasive species sign  
Photo Type: IS



Date: 2024-12-20  
Location: 46.3166°, -94.4866°  
Description: Invasive species sign  
Photo Type: IS



*Recreation Use and Facility Inventory Study  
Pillager Hydroelectric Project  
Cass and Morrison Counties, MN  
February 2025*

***Pillager Dam Public Canoe Portage and Shorefishing Access***

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### BACKGROUND

OBSERVER NAME	DATE	START TIME
Amanda Carlson	2024-05-25	12:55
END TIME	PROJECT	SITE NAME
14:30	Pillager	Pillager Dam Public Canoe Portage & Shorefishing Access

#### RECREATIONAL OBSERVATION FORM

WEATHER	TEMPERATURE	NUMBER OF PEOPLE OBSERVED	NUMBER OF VEHICLES OBSERVED
Sunny	65	7	2

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

The entrance is gated. The two track access road/ walking path has a lot of poison ivy. The shore fishing area has a couple minor areas with minor erosion. No sediment migration into waterbody noted. Also noted discarded carp along shoreline.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

2

AVERAGE SITE UTILIZATION	SUFFICIENT OPPORTUNITIES TALLY	AVERAGE CONDITION	SAFETY CONCERNS TALLY
3	Yes: 2 No: 0	4.5	Yes: 0 No: 2

#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC CANOE PORTAGE & SHOREFISHING ACCESS: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?
3	Fishing from the shore	3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
4

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?  
 Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
The locked gate is appreciated. The gate keeps overcrowding and litter from space.

##### PILLAGER DAM PUBLIC CANOE PORTAGE & SHOREFISHING ACCESS: SURVEY 2

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?
4	Fishing from the shore	3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?  
 Yes  No  N/A

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
5

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? IF YES, PLEASE EXPLAIN:  
---

Yes  No  N/A

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?  
Very happy the road has been gated. No concerns. Great place to fish.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-06-12

START TIME  
14:19

END TIME  
16:21

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Canoe Portage &  
Shorefishing Access

#### RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
67

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

##### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

##### NOTES

No visitors observed during the survey period.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION

SAFETY CONCERNS TALLY

---

---

#### RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### BACKGROUND

OBSERVER NAME Amanda Carlson	DATE 2024-06-23	START TIME 10:02
END TIME 12:00	PROJECT Pillager	SITE NAME Pillager Dam Public Canoe Portage & Shorefishing Access

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 74	NUMBER OF PEOPLE OBSERVED 2	NUMBER OF VEHICLES OBSERVED 1
------------------	-------------------	--------------------------------	----------------------------------

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

---

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

1

AVERAGE SITE UTILIZATION 3	SUFFICIENT OPPORTUNITIES TALLY Yes: 0 No: 1	AVERAGE CONDITION 3	SAFETY CONCERNS TALLY Yes: 0 No: 1
-------------------------------	--	------------------------	---------------------------------------

#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC CANOE PORTAGE & SHOREFISHING ACCESS: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY?  
2

OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP.  
Fishing from the shore

ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION?  
3

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT?

Yes  No  N/A

IF NO, PLEASE EXPLAIN:  
Limited access to site for handicap

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE?  
3

IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE?

Yes  No  N/A

IF YES, PLEASE EXPLAIN:  
---

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

For years, I didn't know I could fish here because of the no trespassing sign. I enjoy fishing at this location. My cousin is in a wheelchair and it is challenging maneuvering around the gate.

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### BACKGROUND

---

OBSERVER NAME  
Amanda Carlson

DATE  
2024-07-05

START TIME  
10:00

END TIME  
12:02

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Canoe Portage &  
Shorefishing Access

#### RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
70

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

##### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

##### NOTES

No people observed during time on site.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION

SAFETY CONCERNS TALLY

---

---

#### RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### BACKGROUND

OBSERVER NAME Austin Johnson	DATE 2024-07-24	START TIME 11:36
END TIME 13:37	PROJECT Pillager	SITE NAME Pillager Dam Public Canoe Portage & Shorefishing Access

#### RECREATIONAL OBSERVATION FORM

WEATHER Sunny	TEMPERATURE 71	NUMBER OF PEOPLE OBSERVED 1	NUMBER OF VEHICLES OBSERVED 0
------------------	-------------------	--------------------------------	----------------------------------

##### OBSERVED ACTIVITIES

- Fishing from the shore  Fishing from a boat  Motorized boating  Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing  Swimming  Hiking/Walking/Jogging  Bicycling  Picnicking  Camping  
 Viewing Wildlife/Birdwatching  Photography  Other:

##### NOTES

One young guy fishing and bowfishing from shore. He said he only sees a couple of guys there smoking cigars from time to time.

#### SURVEY SUMMARY

##### Primary Activities by Type

Fishing from the shore:

1

AVERAGE SITE UTILIZATION 2	SUFFICIENT OPPORTUNITIES TALLY Yes: 1 No: 0	AVERAGE CONDITION 4	SAFETY CONCERNS TALLY Yes: 0 No: 1
-------------------------------	--	------------------------	---------------------------------------

#### RECREATIONAL USER SURVEY FORM

##### PILLAGER DAM PUBLIC CANOE PORTAGE & SHOREFISHING ACCESS: SURVEY 1

THE PURPOSE OF THE SURVEY IS TO OBTAIN INFORMATION ABOUT RECREATION USER EXPERIENCE AT THE SITE AND TO DETERMINE ADEQUACY OF THE SITE. THIS RECREATIONAL USE SURVEY IS IN ASSOCIATION WITH THE RELICENSING PROCESS FOR THE SYLVAN AND PILLAGER HYDROELECTRIC PROJECTS. THE SURVEY WILL TAKE APPROXIMATELY 5 MINUTES AND IS COMPLETELY ANONYMOUS. NO PERSONAL INFORMATION WILL BE COLLECTED. WOULD YOU BE WILLING TO PARTICIPATE IN THE SURVEY?

INCLUDING YOURSELF, HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? 1	OF THE ACTIVITIES LISTED BELOW, PLEASE INDICATE WHICH IS THE PRIMARY ACTIVITY OF THIS TRIP. Fishing from the shore	ON A SCALE OF 1 TO 5, WITH 1 BEING UNDERUTILIZED AND 5 OVERCROWDED, HOW MUCH DO YOU PERCEIVE THIS SITE IS USED FOR RECREATION? 2
---	---	---

IN YOUR OPINION, ARE THE AMOUNT AND TYPES OF RECREATION OPPORTUNITIES OFFERED AT THIS SITE SUFFICIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	IF NO, PLEASE EXPLAIN: ---
--	-------------------------------

ON A SCALE OF 1 TO 5, WITH 1 BEING POOR AND 5 EXCELLENT, HOW WOULD YOU RATE THE OVERALL CONDITION OF THIS SITE? 4	IF YOUR RATING IS 1 OR 2, PLEASE EXPLAIN: ---
--	--

DO YOU HAVE ANY CONCERNS OF SAFETY AT THIS SITE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	IF YES, PLEASE EXPLAIN: ---
--	--------------------------------

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT PUBLIC RECREATION OPPORTUNITIES AND FACILITIES AT THIS RECREATION SITE?

Actual camp sites would be nice

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-08-14

START TIME  
10:54

END TIME  
12:54

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Canoe Portage &  
Shorefishing Access

#### RECREATIONAL OBSERVATION FORM

---

WEATHER  
Cloudy

TEMPERATURE  
73

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

##### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

##### NOTES

There was a significant amount of trash around the fishing pier.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION

SAFETY CONCERNS TALLY

---

---

#### RECREATIONAL USER SURVEY FORM

---

# RECREATIONAL OBSERVATIONS/SPOT COUNTS

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### BACKGROUND

---

OBSERVER NAME  
Austin Johnson

DATE  
2024-09-01

START TIME  
08:07

END TIME  
10:07

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Canoe Portage &  
Shorefishing Access

#### RECREATIONAL OBSERVATION FORM

---

WEATHER  
Sunny

TEMPERATURE  
56

NUMBER OF PEOPLE OBSERVED  
0

NUMBER OF VEHICLES OBSERVED  
0

##### OBSERVED ACTIVITIES

- Fishing from the shore    Fishing from a boat    Motorized boating    Canoe/Kayaking/Stand-up Paddle Boarding  
 Waterskiing/Wakeboarding/Tubing    Swimming    Hiking/Walking/Jogging    Bicycling    Picnicking    Camping  
 Viewing Wildlife/Birdwatching    Photography    Other:

##### NOTES

No people observed.

#### SURVEY SUMMARY

---

AVERAGE SITE UTILIZATION

SUFFICIENT OPPORTUNITIES TALLY

AVERAGE CONDITION

SAFETY CONCERNS TALLY

---

---

#### RECREATIONAL USER SURVEY FORM

---

# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Pillager

### Pillager Dam Public Canoe Portage & Shorefishing Access

#### GENERAL

SURVEYOR NAME  
Austin Johnson

DATE  
2024-09-01

TIME  
08:09

PROJECT  
Pillager

SITE NAME  
Pillager Dam Public Canoe Portage &  
Shorefishing Access

LOCATION  
46.31023894421245, -94.48384345440698

#### SITE TYPE

- Boat Launch Area
- Campsite
- Fishing Area
- Picnic Area
- Trail
- Other:

#### EVIDENCE OF USE AT SITE

- Compaction
- Erosion
- Litter
- Unauthorized Improvements
- Vandalism
- Other:

#### EVIDENCE OF OVERCROWDING

- Anecdotal Information
- Improper Parking
- Site Degradation
- Unauthorized sites
- Waiting Lines
- Other:

#### AMENITIES AT SITE

- Restrooms
- Fishing Pier/Platform
- Boat Launch
- Boat Dock
- Pedestrian Trail
- Firepit/ring
- Information Kiosk
- Informational Signage
- Safety Signage
- Campsite (Primitive)
- Campsite (Improved)

#### GENERAL NOTES

The site was recently mowed.

#### PHOTOS



Date: 2024-09-01  
Location: 46.3146°, -94.4840°  
Description: Parking area near the dam

## GENERAL PHOTOS (CONTINUED)

---



Date: 2024-09-01  
Location: 46.3146°, -94.4840°  
Description: Parking area near the dam



Date: 2024-12-20  
Location: 46.3112°, -94.4835°  
Description: Parking area



Date: 2024-12-20  
Location: 46.3119°, -94.4840°  
Description: Walking path access road beyond the gate

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-20  
Location: 46.3151°, -94.4840°  
Description: Fishing area



Date: 2024-12-20  
Location: 46.3150°, -94.4841°  
Description: Path to fishing area



Date: 2024-12-20  
Location: 46.3147°, -94.4841°  
Description: Path to the dam

## GENERAL PHOTOS (CONTINUED)

---



Date: 2024-12-20  
Location: 46.3145°, -94.4843°  
Description: Canoe portage path



Date: 2024-12-20  
Location: 46.3146°, -94.4848°  
Description: Canoe portage landing



Date: 2024-12-20  
Location: 46.3151°, -94.4841°  
Description: Fishing area

**GENERAL PHOTOS (CONTINUED)**

---



Date: 2024-12-20  
Location: 46.3151°, -94.4840°  
Description: Fishing area



Date: 2024-12-20  
Location: 46.3151°, -94.4840°  
Description: Fishing area

**EROSION OBSERVATIONS**

---

ARE THERE AREAS OF NOTICEABLE EROSION, SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

EROSION DESCRIPTION

---

**PHOTOS**

---

---

## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE  
1

NUMBER OF LANES ON ACCESS ROADS  
1

ROAD CONDITION  
G = Good condition (Facility is functional and well maintained)

ROAD CONDITION NOTES  
---

## PHOTOS



Date: 2024-09-01  
Location: 46.3114°, -94.4835°  
Description: Parking area near the road



Date: 2024-09-01  
Location: 46.3112°, -94.4835°  
Description: Parking area and gate near the road

**ACCESS ROAD PHOTOS (CONTINUED)**

---



Date: 2024-09-01  
Location: 46.3112°, -94.4836°  
Description: Highway turn off



Date: 2024-09-01  
Location: 46.3116°, -94.4835°  
Description: Path beyond the gate towards the dam



Date: 2024-09-01  
Location: 46.3118°, -94.4840°  
Description: Path beyond the gate, walking towards the dam

## ACCESS ROAD PHOTOS (CONTINUED)

---



Date: 2024-09-01  
Location: 46.3197°, -94.4783°  
Description: Path beyond the gate, walking towards the dam



Date: 2024-09-01  
Location: 46.3119°, -94.4840°  
Description: Path beyond the gate, walking towards the dam



Date: 2024-09-01  
Location: 46.3147°, -94.4840°  
Description: Access road from the dam looking south

## PARKING AREA OBSERVATIONS

PARKING AREA CONDITION  
M - Needs maintenance

PARKING CONDITION NOTES  
The gate to access is closed to vehicular traffic. There is parking for approximately two vehicles in front of the gate.

NUMBER OF DESIGNATED HANDICAP SPACES  
0

IS THERE SIGNAGE DELINEATING HANDICAP SPACES?  
 Yes  No

NUMBER OF REGULAR SPACES  
1

NUMBER OF VEHICLE & TRAILER SPACES  
0

## PHOTOS



Date: 2024-09-01  
Location: 46.3113°, -94.4835°  
Description: Parking area with a tree down

## FISHING PIER/PLATFORM OBSERVATIONS

### FISHING PIER OR PLATFORM ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_FP-1

### FISHING PIER CONDITION

- N - Needs to be replaced  
 R - Needs to be repaired  
 M - Needs maintenance  
 G - Good condition

### FISHING PIER CONDITION NOTES

This is a shorefishing area directly below the dam (no actual pier). Some minor litter observed.

## PHOTOS



Date: 2025-01-28  
Location: 46.3151°, -94.4841°  
Description: Shore fishing area  
Photo Type: FP



Date: 2025-01-28  
Location: 46.3151°, -94.4840°  
Description: Shore fishing area  
Photo Type: FP

## FISHING PIER PHOTOS (CONTINUED)

---



Date: 2025-01-28  
Location: 46.3151°, -94.4840°  
Description: Shore fishing area  
Photo Type: FP

## BOAT LAUNCH OBSERVATIONS

### BOAT LAUNCH ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_BL-1

### BOAT LAUNCH SURFACE

- Hard Surface
- Gravel
- Unimproved (informal)

### BOAT LAUNCH CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### NUMBER OF LANES ON BOAT LAUNCH

1

### BOAT LAUNCH NOTES

Upstream landing area is slightly overgrown.

## PHOTOS



Date: 2024-09-01  
Location: 46.3151°, -94.4840°  
Description: Downstream launch area  
Photo Type: BL



Date: 2024-09-01  
Location: 46.3151°, -94.4840°  
Description: Downstream launch area  
Photo Type: BL

## BOAT LAUNCH PHOTOS (CONTINUED)

---



Date: 2024-09-01  
Location: 46.3152°, -94.4839°  
Description: Downstream launch area  
Photo Type: BL



Date: 2024-09-01  
Location: 46.3146°, -94.4847°  
Description: Upstream landing  
Photo Type: BL



Date: 2024-09-01  
Location: 46.3146°, -94.4848°  
Description: Upstream landing  
Photo Type: BL

## PEDESTRIAN TRAIL OBSERVATIONS

### PEDESTRIAN TRAIL ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_PT-1

### PEDESTRIAN TRAIL CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### PEDESTRIAN TRAIL CONDITION NOTES

The area was recently mowed.

## PHOTOS



Date: 2024-09-01  
Location: 46.3148°, -94.4840°  
Description: Walking path down to the fishing area  
Photo Type: PT



Date: 2024-09-01  
Location: 46.3148°, -94.4841°  
Description: Walking path down to the fishing area  
Photo Type: PT

**PEDESTRIAN TRAIL PHOTOS (CONTINUED)**

---



Date: 2024-09-01  
Location: 46.3149°, -94.4841°  
Description: Walking path down to the fishing area  
Photo Type: PT



Date: 2024-09-01  
Location: 46.3150°, -94.4841°  
Description: Walking path down the fishing area  
Photo Type: PT



Date: 2024-09-01  
Location: 46.3145°, -94.4840°  
Description: Portage walking path  
Photo Type: PT

**PEDESTRIAN TRAIL PHOTOS (CONTINUED)**

---



Date: 2024-09-01  
Location: 46.3145°, -94.4843°  
Description: Portage walking path  
Photo Type: PT



Date: 2024-09-01  
Location: 46.3145°, -94.4845°  
Description: Landing area by the portage  
Photo Type: PT



Date: 2024-09-01  
Location: 46.3145°, -94.4845°  
Description: Portage Landing area  
Photo Type: PT

**PEDESTRIAN TRAIL PHOTOS (CONTINUED)**

---



Date: 2024-09-01  
Location: 46.3147°, -94.4841°  
Description: Path walking up to the dam  
Photo Type: PT

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_IS-1

### WHAT KIND OF SIGN IS IT?

- Historical Marker
- Part 8 Marker
- Trail Marker
- Fishing Regulation Sign
- Other:

### SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-09-01  
Location: 46.3115°, -94.4835°  
Description: Signs at the entrance gate  
Photo Type: IS

## INFORMATIONAL SIGNAGE OBSERVATIONS

### INFORMATIONAL SIGN ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_IS-2

### WHAT KIND OF SIGN IS IT?

- Historical Marker  
 Part 8 Marker  
 Trail Marker  
 Fishing Regulation Sign  
 Other:

### SIGNAGE CONDITION

- N - Needs to be replaced  
 R - Needs to be repaired  
 M - Needs maintenance  
 G - Good condition

### SIGNAGE CONDITION NOTES

Sign is falling over. The sign is also not visible from the water.

## PHOTOS



Date: 2024-09-01  
Location: 46.3146°, -94.4848°  
Description: Portage marker  
Photo Type: IS



Date: 2024-09-01  
Location: 46.3146°, -94.4848°  
Description: Portage marker  
Photo Type: IS

## SAFETY SIGNAGE OBSERVATIONS

SAFETY SIGN ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_SS-1

SAFETY SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SAFETY SIGNAGE CONDITION NOTES

Slightly overgrown

## PHOTOS



Date: 2024-09-01

Location: 46.3151°, -94.4841°

Description: Danger sign above the fishing area

Photo Type: SS

## SAFETY SIGNAGE OBSERVATIONS

### SAFETY SIGN ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_SS-2

### SAFETY SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

### SAFETY SIGNAGE CONDITION NOTES

Sign is overgrown

## PHOTOS



Date: 2024-12-20

Location: 46.3147°, -94.4841°

Description: Danger, no trespassing sign

Photo Type: SS

## SAFETY SIGNAGE OBSERVATIONS

SAFETY SIGN ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_SS-3

SAFETY SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SAFETY SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20

Location: 46.3150°, -94.4843°

Description: Danger, no trespassing sign

Photo Type: SS

## SAFETY SIGNAGE OBSERVATIONS

SAFETY SIGN ID

Pillager\_Pillager Dam Public Canoe Portage & Shorefishing Access\_SS-4

SAFETY SIGNAGE CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

SAFETY SIGNAGE CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20

Location: 46.3150°, -94.4843°

Description: Security cameras in use

Photo Type: SS



***Crow Wing River Canoe Campsite***

# MP HYDRO RECREATION FACILITY INVENTORY AND CONDITION ASSESSMENT

## Pillager

### Crow Wing River Canoe Campsite

#### GENERAL

**SURVEYOR NAME**

Jared booms

**DATE**

2024-08-27

**TIME**

15:31

**PROJECT**

Pillager

**SITE NAME**

Crow Wing River Canoe Campsite

**LOCATION**

46.30508022148954, -94.54140314050998

**SITE TYPE**

- Boat Launch Area
- Campsite
- Fishing Area
- Picnic Area
- Trail
- Other:

**EVIDENCE OF USE AT SITE**

- Compaction
- Erosion
- Litter
- Unauthorized Improvements
- Vandalism
- Other:

**EVIDENCE OF OVERCROWDING**

- Anecdotal Information
- Improper Parking
- Site Degradation
- Unauthorized sites
- Waiting Lines
- Other:

**AMENITIES AT SITE**

- Restrooms
- Fishing Pier/Platform
- Boat Launch
- Boat Dock
- Pedestrian Trail
- Firepit/ring
- Information Kiosk
- Informational Signage
- Safety Signage
- Campsite (Primitive)
- Campsite (Improved)

**GENERAL NOTES**

Campsite does not look like it's been used for a while. No litter, no matted down vegetation and no surveys filled out.

#### PHOTOS



Date: 2024-08-28  
Location: 46.3050°, -94.5414°  
Description: Fire ring

GENERAL PHOTOS (CONTINUED)



Date: 2024-08-28  
Location: 46.3051°, -94.5414°  
Description: Toilet marker



Date: 2024-08-28  
Location: 46.3051°, -94.5414°  
Description: Campsite area



Date: 2024-08-28  
Location: 46.3051°, -94.5414°  
Description: Campsite area

---

## EROSION OBSERVATIONS

ARE THERE AREAS OF NOTICEABLE EROSION, SLUMPING, OR OTHER FORMS OF INSTABILITY?

Yes  No

EROSION DESCRIPTION

---

## PHOTOS

---

---

## ACCESS ROAD OBSERVATIONS

NUMBER OF ACCESS ROADS TO THE SITE

0

NUMBER OF LANES ON ACCESS ROADS

0

ROAD CONDITION

---

ROAD CONDITION NOTES

---

## PHOTOS

---

---

## PARKING AREA OBSERVATIONS

PARKING AREA CONDITION

---

PARKING CONDITION NOTES

---

NUMBER OF DESIGNATED HANDICAP SPACES

0

IS THERE SIGNAGE DELINEATING HANDICAP SPACES?

Yes  No

NUMBER OF REGULAR SPACES

0

NUMBER OF VEHICLE & TRAILER SPACES

0

## PHOTOS

---

## FIREPIT/RING OBSERVATIONS

FIREPIT OR RING ID

Pillager\_Crow Wing River Canoe  
Campsite\_FI-1

FIREPIT CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

FIREPIT CONDITION NOTES

---

## PHOTOS



Date: 2024-08-28  
Location: 46.3051°, -94.5414°  
Description: Fire ring  
Photo Type: FI

## FIREPIT/RING OBSERVATIONS

FIREPIT OR RING ID

Pillager\_Crow Wing River Canoe  
Campsite\_FI-2

FIREPIT CONDITION

- N - Needs to be replaced
- R - Needs to be repaired
- M - Needs maintenance
- G - Good condition

FIREPIT CONDITION NOTES

---

## PHOTOS



Date: 2024-12-20  
Location: 46.3050°, -94.5406°  
Description: Fire ring  
Photo Type: FI

## CAMPSITE OBSERVATIONS

### CAMPSITE ID

Pillager\_Crow Wing River Canoe  
Campsite\_CS-1

### WHAT IS THE TYPE OF CAMPSITE?

- Primitive  
 Improved

### CAMPSITE CONDITION

- N - Needs to be replaced  
 R - Needs to be repaired  
 M - Needs maintenance  
 G - Good condition

### CAMPSITE CONDITION NOTES

Overall good site, could use a better access point. The wild rice is starting to hide the access.

## PHOTOS



Date: 2024-08-28  
Location: 46.3048°, -94.5415°  
Description: Canoe Landing  
Photo Type: CS



Date: 2024-08-28  
Location: 46.3048°, -94.5415°  
Description: Landing sign  
Photo Type: CS

CAMPSITE PHOTOS (CONTINUED)

---



Date: 2024-08-28  
Location: 46.3048°, -94.5415°  
Description: Campsite  
Photo Type: CS



Date: 2024-08-28  
Location: 46.3048°, -94.5414°  
Description: Campsite  
Photo Type: CS

## CAMPSITE OBSERVATIONS

### CAMPSITE ID

Pillager\_Crow Wing River Canoe  
Campsite\_CS-2

### WHAT IS THE TYPE OF CAMPSITE?

- Primitive  
 Improved

### CAMPSITE CONDITION

- N - Needs to be replaced  
 R - Needs to be repaired  
 M - Needs maintenance  
 G - Good condition

### CAMPSITE CONDITION NOTES

2nd campsite, unused and unmarked.  
Vegetation is overgrown.

## PHOTOS



Date: 2024-08-28  
Location: 46.3050°, -94.5406°  
Description: Picnic table and camping area  
Photo Type: CS



Date: 2024-08-28  
Location: 46.3050°, -94.5406°  
Description: Toilet marker  
Photo Type: CS

CAMPSITE PHOTOS (CONTINUED)

---



Date: 2024-08-28  
Location: 46.3050°, -94.5407°  
Description: Campsite  
Photo Type: CS



Date: 2024-08-28  
Location: 46.3050°, -94.5406°  
Description: Campsite  
Photo Type: CS

## Appendix L

### Phase I Architectural History Reconnaissance Survey for the Pillager Hydroelectric Relicensing Project (*Privileged*)

## **Appendix M**

### **Phase I Archaeological Investigation and Conditions Assessment of Archaeological Sites for the Pillager Hydroelectric Relicensing Project *(Privileged)***

## **Appendix N**

### **Little Falls Project Recreation Information Correspondence**

**Little Falls Hydroelectric Project (FERC Project No. 2532)**

**Sylvan Hydroelectric Project (FERC Project No. 2454)**

**Pillager Hydroelectric Project (FERC Project No. 2663)**

**Relicensing Consultation Documentation**

Date	12/4/2024
Person documenting conversation	Elizabeth Krchnavek (Kleinschmidt Associates)
Discussion participants	Greg Kimman (City of Little Falls), Elizabeth Krchnavek
Subject of conversation	Recreation Data

**Summary of Conversation:**

Discussion about available recreation data for certain City of Little Falls recreation site. Elizabeth Krchnavek explained that in response to FERC's July 27, 2023 letter, and as proposed in the Minnesota Power's approved study plan, the Licensee is requesting available recreation user data at the City of Little Falls recreation sites in the Little Falls Project (FERC P-2532) Vicinity. The parks include Mill Park, Maple Island Park, James Green Park, Veterans Memorial Park, Kiwanis Park, Old City Beach Parking Lot, Canoe Portage, LeBourget Park, and Riverside Park. Greg Kimman confirmed that those sites are owned and maintained by the City of Little Falls. Greg Kimman explained that the City of Little Falls does not collect recreation data regularly, and does not have recreation user data to provide. Greg Kimman offered that he could provide estimates on annual use at the site via email.

**From:** Kimman, Greg <GregK@ci.little-falls.mn.us>  
**Sent:** Monday, January 13, 2025 10:28 AM  
**To:** Elizabeth Krchnavek <Elizabeth.Krchnavek@kleinschmidtgroup.com>  
**Cc:** Lesley Brotkowski <Smith <alexs@ci.little-falls.mn.us>; Zylka, Wendy <WendyZ@ci.little-falls.mn.us>  
**Subject:** RE: Request for Available Recreation User Information on Recreation Sites

Hi Elizabeth,

- 1) The 200 would be portages around the dam.
- 2) That is correct.

Greg Kimman, PE  
City Engineer/Public Works Director  
100 7<sup>th</sup> Avenue NE  
Little Falls, MN 56345

Ph: 320-616-5500

---

**From:** Elizabeth Krchnavek <[Elizabeth.Krchnavek@kleinschmidtgroup.com](mailto:Elizabeth.Krchnavek@kleinschmidtgroup.com)>  
**Sent:** Friday, January 10, 2025 10:57 AM  
**To:** Kimman, Greg <[GregK@ci.little-falls.mn.us](mailto:GregK@ci.little-falls.mn.us)>  
**Cc:** Lesley Brotkowski <[Lesley.Brotkowski@kleinschmidtgroup.com](mailto:Lesley.Brotkowski@kleinschmidtgroup.com)>; Gregory Prom (MP) <[gprom@mnpower.com](mailto:gprom@mnpower.com)>  
Smith <[alexs@ci.little-falls.mn.us](mailto:alexs@ci.little-falls.mn.us)>; Zylka, Wendy <[WendyZ@ci.little-falls.mn.us](mailto:WendyZ@ci.little-falls.mn.us)>  
**Subject:** RE: Request for Available Recreation User Information on Recreation Sites

Good Morning Greg,

I have a couple quick follow up questions on the recreation estimates you provided below.

1. Do you have estimate of annual number of portages around the dam? I know you have 200 canoe/kayakers listed at James Green Park, but do you have an estimate on how many are actually portaging around the dam, vs. only paddling below/above the dam?
2. Am I assuming correctly that the number you have listed for each recreation activity is the primary activity of the visitor? So, for example, at Mill Park you would estimate 4,600 visitors annually total (with 3,600 their primary purpose of visiting being fishing, and 1,000 their primary purpose being walking)?

Thank you very much,

Elizabeth Krchnavek  
Licensing Coordinator  
  
Cell: 571-230-6830  
Office: 984-389-1086  
[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

---

**From:** Elizabeth Krchnavek  
**Sent:** Monday, December 9, 2024 3:03 PM  
**To:** Kimman, Greg <[GregK@ci.little-falls.mn.us](mailto:GregK@ci.little-falls.mn.us)>  
**Cc:** Lesley Brotkowski <[Lesley.Brotkowski@KleinschmidtGroup.com](mailto:Lesley.Brotkowski@KleinschmidtGroup.com)>; Gregory Prom (MP) <[gprom@mnpower.com](mailto:gprom@mnpower.com)>; Alex Smith <[alexs@ci.little-falls.mn.us](mailto:alexs@ci.little-falls.mn.us)>; Zylka, Wendy <[wendyz@ci.little-falls.mn.us](mailto:wendyz@ci.little-falls.mn.us)>  
**Subject:** RE: Request for Available Recreation User Information on Recreation Sites

Good Afternoon Greg,  
Received. Thank you very much for providing this information. We'll review and let you know if we have any questions.  
Thank you!

Elizabeth Krchnavek  
Licensing Coordinator  
  
Cell: 571-230-6830  
Office: 984-389-1086  
[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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**From:** Kimman, Greg <[GregK@ci.little-falls.mn.us](mailto:GregK@ci.little-falls.mn.us)>  
**Sent:** Monday, December 9, 2024 11:20 AM  
**To:** Elizabeth Krchnavek <[Elizabeth.Krchnavek@kleinschmidtgroup.com](mailto:Elizabeth.Krchnavek@kleinschmidtgroup.com)>; Alex Smith <[alexs@ci.little-falls.mn.us](mailto:alexs@ci.little-falls.mn.us)>  
**Cc:** Lesley Brotkowski <[Lesley.Brotkowski@kleinschmidtgroup.com](mailto:Lesley.Brotkowski@kleinschmidtgroup.com)>; Gregory Prom (MP) <[gprom@mnpower.com](mailto:gprom@mnpower.com)>; Zylka, Wendy <[WendyZ@ci.little-falls.mn.us](mailto:WendyZ@ci.little-falls.mn.us)>  
**Subject:** RE: Request for Available Recreation User Information on Recreation Sites

Hi Elizabeth,  
We do not have counts of activities at the various parks, but I can give you an estimated usage and the activities at each park.

#### Annual Visitors

##### Mill Park:

Fishing 3600  
Walking/Biking 1000

##### Maple Island Park

Walking 14,500  
Fishing 1,500  
Kayak/Canoe 200  
Concerts/events 3,000

##### James Green

Walking 14,500

Fishing 3,500  
Kayak/Canoe 200

Veterans Memorial  
Walking 3,000

Kiwanis  
Walking 2,000  
Fishing 2,000

City Beach Parking Lot  
Fishing 750

Canoe Portage (included in Maple Island & James Green)

Lebourget  
Walking 1,500  
Fishing 2000  
Kayak/Canoe 200  
Disc Golf 1,500  
Concerts 500

Riverside Park  
Picnic 500

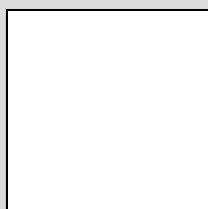
This does not include the arts & crafts fair held in early September. We usually get close to 100,000 visitors to LF during that weekend.

Greg Kimman, PE  
City Engineer/Public Works Director  
100 7<sup>th</sup> Avenue NE  
Little Falls, MN 56345

Ph: 320-616-5500

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**From:** Elizabeth Krchnavek <[Elizabeth.Krchnavek@kleinschmidtgroup.com](mailto:Elizabeth.Krchnavek@kleinschmidtgroup.com)>  
**Sent:** Tuesday, December 3, 2024 4:00 PM  
**To:** Alex Smith <[alexs@ci.little-falls.mn.us](mailto:alexs@ci.little-falls.mn.us)>; Kimman, Greg <[GregK@ci.little-falls.mn.us](mailto:GregK@ci.little-falls.mn.us)>  
**Cc:** Lesley Brotkowski <[Lesley.Brotkowski@kleinschmidtgroup.com](mailto:Lesley.Brotkowski@kleinschmidtgroup.com)>; Gregory Prom (MP) <[gprom@mnpower.com](mailto:gprom@mnpower.com)>; Zylka, Wendy <[WendyZ@ci.little-falls.mn.us](mailto:WendyZ@ci.little-falls.mn.us)>  
**Subject:** Request for Available Recreation User Information on Recreation Sites



**IRONSCALES couldn't recognize this email as this is the first time you received an email from this sender [Elizabeth.Krchnavek@kleinschmidtgroup.com](mailto:Elizabeth.Krchnavek@kleinschmidtgroup.com)**

Good Afternoon,

On behalf of Minnesota Power, I am requesting available information pertaining to recreation sites owned by the City of Little Falls adjacent to the Little Falls Hydroelectric Project (Little Falls Project) (FERC No. 2532). Minnesota Power is the Licensee of the Little Falls Project, which is currently in the Federal Energy Regulatory Commission (FERC) relicensing process. FERC has asked Minnesota Power to gather available information for the recreation sites listed below. This information will be included in a study report, which will be filed with FERC by February 7, 2025.

Could you please confirm that the City of Little Falls owns each of the recreation sites listed in Table 1 below? Do you have any available recreation user information or data of the recreation sites listed in Table 1? If so, could you please provide these available data? If helpful, I would be happy to discuss over the phone available recreation user data that you may have on these sites. Please feel free to reach out to me directly or we can schedule a call at a time convenient to you. Thank you very much for your assistance.

**Table 1: Recreation Sites to Obtain Available Recreation Use Information in the Little Falls Project Vicinity**

Site Name	Description
Mill Park	615 Lindbergh Drive South.
Maple Island Park	59 3 <sup>rd</sup> Avenue SE.
James Green Park	38 1 <sup>st</sup> Avenue SE.
Veterans Memorial Park	25 Broadway Avenue East.
Kiwanis Park	59 1 <sup>st</sup> Avenue NE.
Old City Beach Parking Lot	501 1 <sup>st</sup> Street NE.
Canoe Portage	Located at Front Street and Broadway East. Canoe portage around dam.
LeBourget Park	300 Paul Larson Memorial Drive.
Riverside Park	901 1 <sup>st</sup> Street NE.

Thank you,

Elizabeth Krchnavek  
Licensing Coordinator

The logo for Kleinschmidt, featuring the name in a stylized blue font with a green underline.

Cell: 571-230-6830

Office: 984-389-1086

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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**From:** Elizabeth Krchnavek

**Sent:** Friday, November 15, 2024 3:16 PM

**To:** [wendyz@ci.little-falls.mn.us](mailto:wendyz@ci.little-falls.mn.us)

**Cc:** Lesley Brotkowski <[Lesley.Brotkowski@KleinschmidtGroup.com](mailto:Lesley.Brotkowski@KleinschmidtGroup.com)>; Gregory Prom (MP) <[gprom@mnpower.com](mailto:gprom@mnpower.com)>

**Subject:** Request for Available Recreation User Information on Recreation Sites

Good Afternoon,

On behalf of Minnesota Power, I am requesting information pertaining to recreation sites owned by the City of Little Falls adjacent to the Little Falls Hydroelectric Project (Little Falls Project) (FERC No. 2532). Minnesota Power is the Licensee of the Little Falls Project, which is currently in the Federal Energy Regulatory Commission (FERC) relicensing process. FERC has asked Minnesota Power to gather available information for the recreation sites listed below. This information will be included in a study report, which will be filed with FERC by February 7, 2025.

Could you please confirm that the City of Little Falls owns each of the recreation sites listed in Table 1 below? Do you have any available recreation user information or data of the recreation sites listed in Table 1? If so, could you please provide these available data?

**Table 1: Recreation Sites to Obtain Available Recreation Use Information in the Little Falls Project Vicinity**

Site Name	Description
Mill Park	615 Lindbergh Drive South.
Maple Island Park	59 3 <sup>rd</sup> Avenue SE.
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Veterans Memorial Park	25 Broadway Avenue East.
Kiwanis Park	59 1 <sup>st</sup> Avenue NE.
Old City Beach Parking Lot	501 1 <sup>st</sup> Street NE.
Canoe Portage	Located at Front Street and Broadway East. Canoe portage around dam.
LeBourget Park	300 Paul Larson Memorial Drive.
Riverside Park	901 1 <sup>st</sup> Street NE.

I would be happy to schedule a call if it would be easier, to discuss available recreation user data that you may have on these sites. Thank you very much for your assistance.

Thank you,

Elizabeth Krchnavek  
Licensing Coordinator

**Kleinschmidt**

Cell: 571-230-6830

Office: 984-389-1086

[www.KleinschmidtGroup.com](http://www.KleinschmidtGroup.com)

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